

City Development Plan: Nagpur, Maharashtra, India

Final Report

Indo-USAID Financial Institutions Reform and Expansion Project— Debt & Infrastructure Component (FIRE-D Project)

USAID-TCGI Contract No. 386-C-00-04-00119-00

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Maharashtra is one of India's most progressive states and is seen as the preferred destination for investment in industry and business. The state is endowed with many natural resources, strategic locations and enterprising human capital. The information, communications, tele-communications, entertainment, light engineering and manufacturing sectors are of particular significance to Maharashtra.

The city of Nagpur, famously known as the orange city, has always been an important administration centre. Though situated at an advantageous geographical location, the city's economic development has been constrained by the limited development of the hinterland of Central India. However, with technological developments and the overall development of Central India, the scenario is set to change. The city's location, coupled with growth triggers like the construction of the north-south and east-west corridors, the proposed investments in the multimodal transport hub and the development of the special economic zone promise to stimulate the city's economic growth. The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) provides an impetus to the development of Nagpur's burgeoning economy.

The Nagpur Municipal Corporation provides core civic services, which form the base of the economic development of any city. The City Development Plan, prepared by the Corporation, unfolds the vision for the growth of Nagpur into an eco-city that provides adequate, equitable, and sustainable access of urban services to all its citizens and also ensures that the city is safe and liveable. Besides, the Plan also identifies specific strategies and actions to realise this vision.

I would like to commend the Nagpur Municipal Corporation and the citizens of Nagpur for jointly evolving this comprehensive and inspiring Plan for the city. Nagpur is one of the first city in the country to be granted funding under JNNURM. I congratulate the Corporation on achieving this difficult feat. I wish the Corporation all success in implementing this Plan and hope that the citizens of Nagpur will wholeheartedly support the Corporation's efforts in realising this great vision.

Vilasrao Deshmukh Chief Minister Maharashtra



Located at practically the geographical centre of India, the city of Nagpur enjoys the status of a capital city in the state of Maharashtra. It completed 300 years of establishment in 2002. Despite being an important administration centre and favourably situated, Nagpur has not seen the expected economic development due to the limited development of the hinterland of Central India. However, rapid technological developments are taking place in the hinterland of Central India and this promises well for the flowering of Nagpur's economy.

Nagpur measures well on various liveability indices in comparison with other cities. The city has all the requisites for being groomed into a high quality service centre. The large number of engineering colleges in the city make it an attractive location for the IT-ITES industries. Also, its geographical location makes Nagpur ideal for being developed into a passenger and cargo hub. However, the realisation of the city's full potential is crucially dependent on the up gradation of its basic infrastructure services. The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) provides an impetus to this development.

As a mandatory requirement of the Mission, the City Development Plan has been prepared by the Nagpur Municipal Corporation in consultation with its citizens. The citizens of Nagpur have identified a vision for the city — to make it the "Growth Nucleus of India". The Plan specifies strategies and actions to achieve this vision.

Nagpur has been the first city in India to be granted funds under JNNURM. The high commitment and determined efforts of the Nagpur Municipal Corporation officials, along with the spirited support of the citizens, have brought about this success. I wish the Corporation and the citizens all luck in moving towards this noble vision for Nagpur. I also assure them of my support to this ambitious endeavour.

Vilas Muttemwar

Minister of State (Independent Charge)
Ministery of Non-Conventional Energy Sources
Government of India, New Delhi.



The city of Nagpur has always enjoyed the status of a capital city and that continues till date. The city is located at practically the geographical centre of India and is strategically positioned on national and international railway and aviation routes. Its unique location makes it a logical and appropriate location for being developed into a passenger and cargo hub. Nagpur also has the potential to be developed into a significant medical hub, tourism gateway to the hinterland and a power generation centre for the region. The Jawaharlal Nehru National Urban Renewal Mission (JNNURM), launched by the Government of India in FY2005-2006, provides an opportunity to the city to close the widening gap between the existing and desirable levels of service delivery.

The City Development Plan (CDP) has been prepared by the Nagpur Municipal Corporation as a mandatory step to access funds under JNNURM. It is the Corporation's strategy that presents the vision for the city, the action plans to achieve the same, the financial sustainability of the Corporation, and the investments needed for achieving the vision. The CDP has been prepared in close consultation with the citizens of the city. Their views were continuously solicited through newspaper articles, essay writing competitions, surveys, interviews, workshops and discussions. The involvement of the stakeholders helped to foster a sense of ownership of the Plan amongst the citizens.

I would like to congratulate the Corporation and the citizens of Nagpur for evolving this comprehensive blueprint for the city. I sincerely acknowledge their efforts and wish them success in the implementation of the same.

Satish Chaturvedi

Minister of Textile,
Ex-Servicemen's welfare & Employment & self Employment
Government of Maharashtra.
Mumbai.



I am extremely pleased to present the City Development Plan to the citizens of Nagpur. The citizens have always been aware and sensitive to the various problems faced by the city. It is their active participation that has made the exercise done by the Nagpur Municipal Corporation in the formulation of the City Development Plan unique. The process involved the participation of business groups, NGOs, trade associations, school children and citizens at large through workshops, surveys, newspaper articles, interviews, essay writing competition, emails and "CDP suggestion boxes".

The City Development Plan for Nagpur deals in a comprehensive, cohesive and concise manner and consciously dwells on all the important elements of governance in the form of themes: land use and housing, urban basic services and infrastructure, transportation and traffic management, slums and urban poor, urban environment, culture and heritage, and urban finance apart from demographic trends, local economy pattern, etc with a long term strategic vision. The citizens' vision is to make Nagpur the Growth Nucleus of Central India.

I believe that this effort of the Nagpur Municipal Corporation will give a vision to the institution which it can realise. I expect the citizens of Nagpur to significantly contribute to this change which they will ultimately benefit from. This plan helps us to quantitatively assess the development of the city and gives us a direction in which all our efforts can be focussed. I hope the active citizens of Nagpur will appreciate this and contribute to our endeavour of making this city one of the leading cities of our country.

Naresh Gawande Mayor Nagpur Municipal Corporation



Nagpur is the winter capital of Maharashtra. With a population of about 20.5 lakhs, the city stands to be an important administrative centre with an advantageous geographical location. It can be seen as a transport hub, connecting the Indian cities to each other and international destinations as well. The city provides access to its own skilled manpower and also to that of the entire region. The city has all the ingredients for emerging as a high quality service centre.

The Nagpur Municipal Corporation, being the local body engaged in providing basic civic amenities to the citizens, plays a crucial role in improving the economic and social infrastructure of the city. The Corporation, with good support from its officials, elected representatives and citizens, has always been in the forefront of accepting and implementing various contemporary ideas and developmental works.

The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) provides an opportunity to the Municipal Corporation to fill the increasing gap between existing and desired service deliveries, even as the pressure on urban infrastructure mounts. It is a stepping stone to achieve improvements in service delivery, governance and financial sustainability. The City Development Plan (CDP) is a mandatory requirement for accessing the JNNURM funds. The CDP prepared by the Corporation with the continuous involvement of the citizens paves the way for achieving the vision of making Nagpur the "Growth Nucleus of Central India." The citizens of Nagpur visualize the city to be an eco-city that provides adequate, equitable, sustainable access to urban services to all its citizens and at the same time ensures that it is safe and liveable.

This plan is the Municipal Corporation's corporate strategy that presents both a vision of a desired future perspective of the city and the Corporation's organisation, and mission statements on how the Corporation, along with the citizens, intends to work towards achieving the long-term vision in the next five years. It has been developed in close consultation with NMC officials, business groups, trade associations, citizens' clubs, NGOs and citizens at large over 13 weeks starting from mid-January 2006. The Action Plan formulated in line with the findings of this report will start showing its effects in due course of time. We sincerely believe this would lead to the betterment of service quality in the city.

It is indeed gratifying that the citizens have provided their continuous support and valuable time in the formulation of the CDP. I would sincerely like to acknowledge the efforts of all the citizens and the concerned staff of the Nagpur Municipal Corporation. I am pleased to place the City Development Plan before the citizens of Nagpur.

Lokesh Chandra

Commissioner
Nagpur Municipal Croproation

The cities and towns in India are expected to play a vital role in the country's socio-economic transformation, as the engines of economic growth and the centre-points of innovation. But the current state of affairs in most of our urban areas is far from satisfactory on all parameters of urban governance. Most municipalities are starved of resources on account of their inability to effectively use their revenue-raising powers.

Given this state of affairs, the Government of India launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in FY 2005-06. The mission will be in place for the next seven years; it aims at creating economically productive, efficient, equitable and responsive cities. The Mission focuses on the development of appropriate enabling frameworks, enhancement of the creditworthiness of municipal governments and integration of the urban poor with the service delivery systems.

In order to be eligible for grant assistance under JNNURM, the Government of India requires eligible cities to formulate a medium-term City Development Plan (CDP) in alignment with citizens' interest and priorities, prepare project proposals in accordance with the CDP, and draw up a timeline for implementing urban sector reforms. The Indo-US FIRE (D-III) project has selected Nagpur as one of the pilot cities to formulate the CDP as per the JNNURM process. In this context, Indo-US FIRE (D-III) has employed the services of CRISIL Infrastructure Advisory to facilitate the preparation of the CDP for Nagpur.

The City Development Plan (CDP) is the Municipal Corporation's corporate strategy that presents both a vision of a desired future perspective for the city and mission statements on how the Corporation, together with other stakeholders, intends to work towards achieving the vision in the next five years. It should translate the Mission into actions and actions into outcomes. The objective of involvement of the stakeholders and endorsement by the local body and other implementing agencies is to hold them accountable for their mission statements, actions and expected outcomes.



The CDP process adopted by Nagpur

The Nagpur CDP has been developed in close consultation with stakeholders over 13 weeks starting from mid-January 2006. The process was divided into three phases.

The first phase started with a rapid city-assessment of Nagpur and identification of the city's strengths, weaknesses and opportunities. This was followed by several capacity building sessions for NMC officials, officials of other government departments and groups of stakeholders including business groups, trade associations, citizens' clubs and NGOs. The objective was to inform them about JNNURM and the process of preparing the CDP. In order to reach out to a larger section of people, workshops were also conducted for representatives of the press and the electronic media. Suggestions and comments were solicited from citizens by way of newspaper articles, interviews, essay writing competition among school children, emails, 'CDP suggestion boxes' kept in every NMC ward office and the like.

The vision and mission workshop with NMC officials (first workshop) focused on the key issues confronting each department, the officials' vision for the city and an action plan to realize the vision. As a follow-up to the workshop, several stakeholders were interviewed individually and their ideas for the city's economic growth and improvement of the quality of life of its people were sought. Phase I concluded with a workshop (second workshop), in which NMC officials and stakeholders together carried out a visioning exercise. Participants were divided into groups, each representing a focus area¹. Vision and mission statements were suggested by each group and action groups were also identified for each mission statement.

The second phase started with focussed group discussions with stakeholders to define actions needed to achieve each mission statement. Based on the discussions and experts' comments, a draft action plan was prepared. Simultaneously, a citizens' survey was conducted through an independent research agency to assess the performance of NMC. The survey also aimed at assessing citizens' perception of slums, their suggestions regarding the improvement of service levels, their willingness to pay for them and finally their vision for the city. Simultaneously, credit strength assessment of NMC was also done to determine its creditworthiness and to identify financial reforms required to sustain various investments proposed by NMC under JNNURM. Phase II concluded with a stakeholders' workshop (third workshop) at which the stakeholders refined and prioritised the strategies and action plans for their respective groups.

The last phase of the CDP preparation process involved assessment of detailed project costing, determination of

¹ The eight groups were 'Water supply, sanitation, sewerage and solid waste management', 'Roads, traffic and transportation', 'Land use and housing', 'Urban poor and slum development', 'Urban environment, gardens and conservation of water bodies', 'Local economic development', 'Education, health and social infrastructure' and 'Tourism, culture and heritage'.

funding sources and identification of risk management measures. Priority actions scheduling was also done for all the prioritized projects/actions based on resource availability along with the preparation of a City Investment Plan (CIP) for the identified projects. The corresponding Financial Operating Plan was also prepared, outlining the preliminary budget, financing assumptions and responsibilities for implementation and financing. All these were integrated into a draft CDP and presented in the fourth and last workshop held on 8th May 2006. The implementation issues relating to the CIP were discussed at the workshop. Based on the discussions in the workshop, this final CDP document was prepared.

About Nagpur

Nagpur has always enjoyed the status of a capital city that continues till date; it is the winter capital of the Maharashtra state. It completed 300 years of establishment in 2002. Nagpur's population (Census of India, 2001) is about 20.5 lakhs with an average density of 95 persons per hectare, which is quite low compared to other comparable cities of India. It is estimated that one-third of the city's population lives in slums. There are about 427 slum pockets in the city spread over an area of about 17 sq. km. Of the 427 slums, 292 slums are notified slums housing 80% of the slum population.

The population trends of Nagpur city show a declining growth rate over the decades; it has decreased from 48.3% in 1921-31 to 32.6% in 1991-2001. Based on the linear projection method, the growth rate may decline to 22.2% in the next three decades (2021-31). The attractiveness of the city for migrants has also been decreasing. In the last decade (1991-2001), about 46% of the population growth was due to in-migration; in the last four years, the figure has declined to 24%. But, considering the development projects and investments in the pipeline, Nagpur's growth



² Human Development Report Maharashtra 2002

rate may revive and the population may double at a faster pace. Nagpur needs to plan for its infrastructure accordingly.

Nagpur shows favourable demographic characteristics. The sex ratio in Nagpur is quite healthy at 936, which nearly equals the all-India figure of 933. About 84% of Nagpur's population is literate as per Census 2001. 66 percent of the city's population is under the age of 40; the 10-25 year age group forms the largest proportion of the total population. This offers a valuable resource for economic development of the city. But, at the same time, if not given optimum opportunities, the tendency to migrate will probably be the highest in this age bracket.

City with latent economic potential

Though Nagpur is an important administration centre with an advantageous geographical location, Nagpur's economic development has been constrained by the limited development of the hinterland of central India. What has probably held back economic growth in the past is the lack of priority given to the region by successive state governments. As of April 2000, the developmental backlog of the region was Rs. 9830 crores.² However, with technological developments and overall development of the central hinterland, the scenario is set to change.

Nagpur has all the ingredients for emerging as a high quality service centre. The region around Nagpur has a large number of engineering colleges with about 8,600 engineering students graduating every year. This renders Nagpur an attractive location for the IT-ITES industry³. Nagpur's unique location also makes it a logical and ideal location for a passenger and cargo hub given its strategic position in national and international railway and aviation routes. It may also work on its potential to develop into a significant medical hub, tourism gateway to the hinterland and a power generation centre for the region.

A possible trigger for Nagpur's efflorescence is the Multimodal International Hub Airport at Nagpur (MIHAN) project. Besides an international airport, the proposed project envisages the creation of a road-rail terminal, a special economic zone (SEZ) and other urban amenities to meet the needs of the working population in around the proposed airport. The SEZ will provide the right platform for exploiting the latent economic potential of the city, which has the potential to create over 1.2 lakhs jobs.

As a part of the preparation of the City Development Plan, an assessment of Nagpur city has been carried out to understand the city's present status, the direction in which it has been moving, and its strengths and weaknesses. The assessment covers the city's basic infrastructure (physical and environment), institutional structure and finally, the financial status of the municipal corporation.

³ A Dataquest-IDC study of the top ten IT cites in India ranked Nagpur seventh, based on parameters such as manpower availability, information, communication and technology (ICT) infrastructure availability and usage, lifestyle and environment. Also, as per the KPMG – NASSCOM survey, Nagpur is one of the top four tier II cities that have a huge potential for information technology and IT enabled services.

Assessment of the existing infrastructure and physical environment

The study encompassed all the vital aspects of infrastructure – water supply, sewerage, storm water drainage, solid waste management, roads and public transport, street lighting, education, access of slum dwellers to basic services, land use, and lakes and rivers. Here is a summary of the findings.

Watersupply

NMC sources 470 MLD mainly from surface sources. Currently, it meets demand, but with population growth it may face a deficit situation by 2011. NMC has already started making plans for augmenting the sources. Post bulk water treatment point, per capita supply of water is 200 lpcd, which is well above the prescribed norms. Though no figures are available for actual supply at household level, it is known that treatment and transmission and distribution losses are very high. Supply is also dissatisfactory in terms of the number of hours of water supply and water pressure. Overall, the water quality of piped supply is good but that of ground water sources is unacceptable in terms of hardness, pH and nitrates. The operational expenses for water supply services have been exceeding the revenues each year.

Seweragesystem

The current sewerage system covers only 60% of the city and suffers from frequent problems of choking and over-flowing. Pumping and treatment facilities are grossly inadequate; out of 235 MLD, only 100 MLD is collected and treated. The system is divided into three zones – north, south and central. The situation is worse in the north zone. Less than 50% of the sewage is collected, which is disposed into the rivers without any treatment.

Storm water drainage

The city's natural drainage pattern is excellent, with suitable topography and a natural gradient. There are two major natural streams – Nag and Pilli and several connecting nallahs running across the city. But with construction and man-made alterations, the natural system has been inadequate and needs to be supplemented by a scientific drainage system. Currently, only 30-35% of the roads have storm water drains. These also carry sewage and hence often get choked and flooded. Both coverage and design need to be improved.

Solid waste management

The collection levels of solid waste are good. 75% of the waste is collected through door-to-door collection services under the 'Swatchata Doot Aplya Dari' system, a



NGO-NMC partnership initiative. Contracts for road sweeping have also been given out to NGOs and private agencies. In spite of several awareness campaigns, the segregation of waste at source is not practised. Overall, citizens are satisfied with collection services and cleanliness levels. The main area of concern with respect to solid waste management in Nagpur is the disposal mechanism; no scientific method of disposal is followed.

Roads and public transport

The Integrated Road Development Project (IRDP) revolutionised the roads in the city, which now enjoy an excellent status, in terms of both coverage and quality. Vehicle ownership is quite high; there are 4.6 lakhs registered vehicles and 280 are being added every day. But the corresponding infrastructure in terms of parking facilities is highly inadequate. Also, the road conditions being excellent, the average travel speed is quite high at 25 km. per hour making road safety a cause of concern. Considering the population and spread of the city, the public transportation system is highly inadequate.

Street lighting

Under the Integrated Road Development Project (IRDP), the City Lighting Improvement Project (CLIP) was introduced for improving street lighting. The corporation has delegated the entire work of managing the tube lights and other fixtures to various contractors in different wards. The attempt has been highly successful. Currently, the service levels are amongst the best performing amongst Indian cities.

Education and medical infrastructure

NMC runs primary schools, which mainly cater to the low-income population. The service levels and infrastructure of these schools is inadequate. In the last few years, a number of private educational institutions have sprung up, providing high quality services to the city. The city also boasts a large number of institutions for higher

education, with students coming from all across the country. About 1250 students are enrolled in the 12 medical colleges and 3192 students are completing their education in the 15 engineering colleges nurtured by the city.

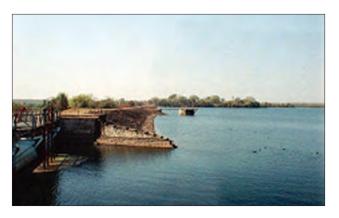
With respect to medical infrastructure, a large number of government and private facilities are available across service levels and categories. The city caters to the entire region with patients coming from neighbouring states. The service levels need to be improved in the government-run facilities.

Access of slum dwellers to basic services

There are 427 slum pockets in Nagpur housing 40% of its population, with a high growth of 22% in the last eight years. Also, almost 50% of the population was below poverty line in 2005. Exact statistics regarding access to basic services by the urban poor is not available with NMC, but stakeholder discussions have revealed some of the key issues in this context. Vulnerability to flooding in low-lying settlements, low ability to pay for basic services, negligence towards informal sector establishments in the planning process and lack of consultations with the stakeholders while planning for the urban poor are a few of these. Of 427, 292 slum pockets are notified. Some of these already have good living conditions, infrastructure and pucca housing. These should be de-notified to ensure focused investments in the less developed pockets. For slum redevelopment, slum rehabilitation schemes are being planned under public-private partnership arrangements.

Landuse

The data for the exact land use pattern in NMC limits is not available. As per the development plan 1986-2011, the proposed land use distribution adheres to UDPFI (Urban Development Plan Formulation and Implementation) guidelines. Discussions with NMC and Nagpur Improvement Trust (NIT) officials reveal that the land demand supply situation is well-balanced in the city. In terms of FSI, there is a large scope for development in the future. A similar situation exists in terms of housing stock as well. Implementation and regular updation of byelaws needs to be done to support the anticipated economic surge.



Urban environment

There are several water bodies in the city including 12 lakes, two rivers and five nallahs. Though exact data is not available, it has been observed that these water bodies are highly polluted. Stakeholder consultations have revealed that the lakes are being filled up or encroached upon, adversely affecting the bio-diversity of the area. NMC/NIT has already initiated some beautification and recreational projects around the lakes and rejuvenation projects are also being planned. In terms of other forms of pollution, i.e. air and noise pollution, levels are well within the prescribed limits with a few exceptions.

Assessment of institutional structure of urban governance

As per the City of Nagpur Corporation (CNC) Act, 1948, the key responsibility for providing basic urban services in Nagpur lies with the NMC. These services include water supply, sewerage, waste management, slum improvement, land use planning, construction and maintenance on internal roads, street lighting, maintenance of parks and gardens, and provision for primary health and education facilities. NMC co-ordinates with various other government organizations like NIT, Maharashtra Housing and Area Development Authority (MHADA), Maharashtra State Road Transport Corporation (MSRTC), traffic police and Maharashtra Pollution Control Board (MPCB) for delivering these basic urban services. NMC has also entered into public-private partnership contracts for the delivery of some its services.

As per the Government of Maharashtra notification, dated 27th February 2001, NMC has been permitted to exercise the powers of a Planning Authority in the entire area under its jurisdiction except the areas covered by the seven NIT schemes. Hence, in the current institutional arrangement, the significance and viability of NIT has become minimal. Considering this, there is a need to constitute a planning authority for the urban agglomeration, supported with modern land management legislations.

MSRTC has the responsibility of providing bus transport services in Nagpur. But it has turned out to be a loss-making operation, which is straining its already fragile financials. MSRTC is willing to transfer responsibility to NMC, but even NMC does not have the financial or managerial capacity to provide urban transport services. This has led to considerable deterioration in service levels in the city.

Assessment of Nagpur Municipal Corporation's finances

Parallel to the infrastructure and institutional assessments, an evaluation of the financial status of NMC has also been carried out. The assessment indicates the corporation's capacity and ability to manage its financial

resources so as to maintain urban services at the prescribed levels. In 2004-05, NMC's revenues registered a compounded annual growth rate (CAGR) of 6.9%, while revenue expenditure increased at a CAGR of 9.0%. But, due to a strong revenue base, there was a revenue account surplus of Rs.78 crores and an overall surplus of Rs.18.98 crores (including capital account).

Revenue income is earned from own and external sources. Among own sources, the largest source is octroi (47%) followed by property tax (18%). There is a further scope to improve revenues under this head by improving the collection efficiency (currently 52%) and widening the tax base. Establishment cost is the largest item (66%) under revenue expenditure and is growing at a rate higher than that of revenue income.

In 2004-05, a capital expenditure of Rs. 79 crores was incurred, mainly covering water supply, public works and roads. The cost recovery of services varies across sectors. In the case of water, revenue expenditure exceeds revenue income each year, making it financially unsustainable. Currently, sewerage charges exceed the O&M expense on the sewerage system. But the current coverage of the system is quite low. As the system expands to cover 100% of the city, the current tax rate for sewerage would prove insufficient. For solid waste management, NMC incurs an expense of Rs. 5.5 per month per household. NMC plans to recover this gradually from the households.

After completing the rapid assessment of the city's infrastructure, physical and environmental aspects, and institutional and financial status, a consultative process was initiated with a capacity building session for NMC officials and city stakeholders to develop a vision and strategy for Nagpur's future developments.

Vision for the city

As a result of workshops and numerous consultations with NMC officials and stakeholders in Nagpur, the vision for Nagpur is emerging as follows:

The Growth Nucleus of Central India

... An eco city that provides adequate, equitable, sustainable access to urban services for all citizens

... A city that is safe, livable and promotes growth of its citizens

The workshops have also indicated that to achieve this vision, NMC would support the theme of Nagpur attaining a key position in IT, ITES and health services related industries. It would also support industrialization in its hinterland and promote education, culture and tourism. To achieve the growth and vision described above, certain mission statements were also defined for every focus area. Some of the key mission statements are given below:

100% coverage in water supply and improved service levels

- 100% coverage in sewerage collection
- Improved road safety and better traffic management through provision of flyovers, bridges, parking facilities, etc.
- 100% solid waste collection efficiency and disposal of waste in an environmental friendly manner

Strategies for achieving Nagpur's vision

Based on close consultations held with various action groups (identified in the visioning workshop), a list of strategies was carefully drawn up and prioritised based on expected outcomes and target group preferences. The strategies related to the areas of local economy, water supply system, sewerage and storm water drainage system, solid waste management, roads and public transport, education and medical facilities, slums and urban poor, urban environment, land use and housing, and culture and heritage. The strategies are summarised below.

Local economy

Agro-processing, steel and allied industries, textiles, transportation and IT are some of the industries that can drive the economy of the city and its surrounding regions. The MIHAN project is expected to galvanise several economic activities in the region and also market the economic potential latent in the city. NMC also has an important role to play in fostering an environment, which is conducive to business. It would provide a single window to all business and commercial groups to deal with matters pertaining to various civic services and approvals, simplify the processes and offer incentives to target industries in the form of lower octroi and land concessions.

Water supply system

The suggested mission statement for water supply services is "Water for all and 24 x 7 supplies with focus on safety, equity, and reliability". To achieve this target, additional schemes need to be designed for sourcing more surface water. Rainwater harvesting should be made compulsory for all new building projects to supplement the ground water. In the interests of reducing transmission



and distribution losses, NMC should refurbish the old distribution system, conduct leak detection studies, identify illegal water connections and discourage public stand posts (PSP). All households should be provided with metered connections to increase coverage to 100% and volumetric billing should be introduced to discourage wastage. Finally, NMC can control its operational expenses by conducting an energy audit, which accounts for the bulk of its operational expenses.

Sewerage and storm water drainage system

The mission statement for the sewerage and storm water drainage system has been defined as "100% coverage of sewage collection and treatment, and strengthening and rejuvenation of the natural drainage system". NMC must extend the sewerage system to the entire city and provide individual connections to all households/constructed units. The proposed sewerage system must ensure that no sewage is disposed untreated into the water bodies in and outside the city. To provide universal access to clean and affordable sanitation facilities at public places, NMC should encourage the 'pay and use' category of public conveniences through public private partnership arrangements and community involvement in the maintenance of the same. NMC must focus on the rejuvenation of the Nag and Pilli Rivers, nallah canalization and the consequent strengthening of the natural drainage system. All the roads must have storm water drains to prevent flooding during peak periods.

Solid waste management

The suggested mission statement for SWM is "Clean city and bin-free city". NMC should make serious attempts to ensure 100% segregation at source through awareness campaigns or the introduction of penalty fees. The current waste dumping practices must be replaced with scientific waste disposal methods. Decentralised waste-to-energy projects should also be explored to improve the financial viability of the system.

Roads and public transport

The city's transport network should be made complete in terms of hierarchy and accessibility, for efficient



movement of traffic. In order to control the growth of private modes in the traffic stream, the city needs an efficient public transport system. It would be ideal to develop a high frequency mini-bus based transport system sustained by eco-friendly fuels. NMC should explore the possibility of fully taking over the operation license from MSRTC. It can even explore the possibility of private participation in the operations. A specific traffic management plan should be designed for problem areas and junctions. Signals, signage and marking also need to be upgraded. Development of parking plazas should get priority in development. Facilities for pedestrians such as footpaths, railings and refuge islands at medians also need to be improved.

Education and medical facilities

NMC's role is limited to primary level services in the area of provision of medical and educational infrastructure. To promote higher-level education and medical facilities, it must provide a conducive environment for other government agencies and private developers in the form of support infrastructure, incentives, etc.

Future steps towards improvement in health care facilities should be based on shift from a target-oriented to community-oriented approach, participatory planning in medical care, emphasis on quality health care and client satisfaction and preventive health care measures. To achieve its mission of 'making Nagpur a medical services hub', NMC should encourage and provide incentives for the setting up of multi-speciality hospitals in the form of access to affordable land, exemption of octroi on equipment and medicine, subsidy on water rates and taxes, convention centre facilities, etc.

Slums and urban poor

A "slum free city" was identified as the sector vision by the 'Slums and urban poor' group. As per the stakeholders, access to basic services for slum dwellers must be ensured and slum rehabilitation programs should be focused upon. More EWS/LIG housing should be provided by the government. Other facilities like public toilets, night shelters, destitute children's homes, beggars' homes, working women's hostels and marriage halls should also be provided.

Simple strategies like the reservation of land for EWS housing with adequate enforcement and adequate financial provisioning can ensure the creation of sufficient and affordable housing stock in the city. Perhaps the most important change needed to manage Nagpur's slums is fostering a collaborative partnership between the local authorities and communities, with strong support from the government. These federations should be involved as equal partners from the beginning of the planning processes. Strategies for improving security of tenure are central to

the improvement of the lives of slum dwellers and land use in urban areas. This may require reform of tenure and land use legislation, coupled with new legislation to prevent forced eviction.

For the implementation of the Slum Rehabilitation Authority (SRA) scheme, it is essential to create an updated database on the conditions of the slum settlements. It is critical to prioritize slums to be considered under the SRA scheme through consultation and public opinion. Wherever SRA is not viable and space constraints are high, in-situ improvement measures can be taken up.

Urban environment

Nagpur has been known as a "clean and green city." It is imperative to preserve this image. To retain the healthy status of Nagpur's urban environment, several planning and conservation initiatives need to be undertaken. This could be achieved through the proper zoning of activities, provision for sufficient breathing space in new developments and adoption of proper landscape design practices at the city level. It is important to devise a plan, which can check the growth of unauthorized developments, especially within the city's precincts. To ensure sustainable development with optimum resource utilization, it may be necessary to develop a regional plan that envisages a balanced relationship between the main city and surrounding regions. A comprehensive water body restoration or revival program in the region is of utmost importance. The lake conservation program should also explore the possibilities of reviving lakes as water sources or points of interest in the city.

Land use and housing

The stakeholders have defined the mission statement as "modern land management practices that promote economic development in an environmentally sustainable manner". Efforts should be made to decongest core areas through selective relocation of commercial and trading activities. High-density high-rise provision must be made in the old city limits to free space for infrastructure development, road widening etc. NMC must discourage



development in critical, ecologically sensitive areas. Development Control Rules (DCR) should be made applicable to these areas to restrict encroachments and unauthorised developments. Based on the compatibility of land uses, detailed studies should be carried out to identify corridors where densification is possible. In selected areas, specific nodes should be identified along high growth routes and developed as high density commercial and entertainment centres; the concept of paid FSI must also be explored. NMC and NIT should encourage builders and developers to develop mass housing by offering suitable incentives. Peripheral area (metropolitan region) development needs to be focussed and integrated with transportation networks through the coordinated efforts of NMC and NIT. For integrated fringe area development, a Metropolitan Planning Committee should be constituted for the Nagpur metropolitan region. This agency should be well-equipped with necessary capacity, in terms of both skills and supporting legislation, for effective planning and management. The efforts of this agency must be systematically co-ordinated with those of NMC.

Culture and heritage

The stakeholders have defined the mission statement for this action area as "Nagpur: Gateway to the tiger country". Nagpur should not only act as an entry point to the Vidarbha region, which holds great tourism potential, but also be seen as a tourism destination itself. Firstly, NMC should prepare a heritage conservation plan. This should be harmonised with various other actions plans for land use, transportation, environment, etc. The plan may be supported by a heritage conservation policy for the city, covering aspects of documentation (status and condition of the heritage structures), strategy (what needs to be done) and implementation (how it should be done). To ensure the successful implementation of this plan, it is important to imbibe a sense of ownership of the heritage structures in various stakeholders. There is a need to create a separate fund for these conservation activities from the budgetary allocations of NMC. Tourism may be developed on themes of heritage, wildlife, religion, health or education. Adequate facilities should be provided to tourists in terms of affordable accommodation, information and booking services, and inter-city and intra-city transport.

Though one of the main aims of JNNURM is to finance the infrastructure investments identified as part of CDP, the larger objective of the mission is to initiate much-needed reforms in ULBs.

Reform agenda for Nagpur

JNNURM specifies that in order to avail of its funding, the State Government and the urban local bodies (ULBs) have to execute a range of reforms. The proposed reforms fall into two categories: Mandatory Reforms and Optional Reforms.

Mandatory Reforms at ULB level	Status of implementation
Adoption of modern accrual based double entry system of accounting	Currently being implemented by NMC
Introduction of a system of E-governance	Project has been initiated by NMC, is expected to be completed by March 2007
Reform of property tax with GIS, so that it becomes a major source of revenue, and arrangement for its implementation so that collection efficiency reaches 85 per cent within the next seven years.	GIS mapping of properties is currently being implemented. Property tax reform has been initiated and would be implemented by March 2008.
Levy of reasonable user charges with the objective of ensuring full collection of cost of operation and maintenance within the next five years	Currently NMC recovers only partial user charges in water supply. NMC plans to gradually increase the same to collect full cost of operation and maintenance by March 2011. NMC plans to collect full user charges for assets created under JNNURM.
Internal earmarking within local body budgets for basic services to the urban poor	Five percent of the budget is earmarked for the provision of services for urban poor under various schemes covering water and sanitation, roads, streetlights, education, primary health care centres, etc. Expenditures on the same are indicated under a separate head in the budget.
Provision of basic services to the urban poor	NMC provides education through schools and health services through primary health care centres to the urban poor. Access to basic services in slums is provided through various schemes of NMC, and slum upgradation programs are undertaken under the aegis of SRA. In addition, NMC also undertakes regularisation and rehabilitation of pre-1995 slums as per the Government policy.

The above form the list of mandatory reforms to be implemented at the ULB level. NMC has complied with all the major requirements of JNNURM. Hence, it holds a

good chance of qualifying for funding under JNNURM.

In addition, NMC has achieved considerable progress in the category of optional reforms prescribed for ULBs.





Optional Reforms at ULB level	Status of implementation
Revision of bye-laws to streamline the approval process for construction of buildings	Revisions have been undertaken and the process has been simplified.
Earmarking at least 20-25 percent of developed land in all housing projects for EWS and LIG category with a system of cross subsidisation	Partially achieved under ULCRA, which has a provision for government share in land development to provide housing for EWS and LIG categories.
Revision of bye-laws to make rainwater harvesting mandatory in all buildings and adoption of water conservation measures	Implemented
Bye-laws for reuse of recycled water	A project for reuse of recycled water is planned and a DPR for the same is under preparation. Draft policy for the reuse of recycled water is being formulated and the same will be submitted to the government for approval. NMC expects the same to be implemented by March 2008.
Administrative reforms	Shall be implemented in a phased manner over the period April 2007 to March 2011.
Structural reforms	Shall be implemented in a phased manner over the period April 2007 to March 2011.
Encouraging PPP	NMC has already experimented with private sector participation in various areas. Some of the initiatives involve the proposed laying of pipeline through BOT; development of commercial complexes, amusement parks and market centres on a BOT basis; PPP in slum rehabilitation; community participation in collection of solid waste, etc.

City Investment Plan and strategies

The total estimated capital investment required for providing efficient services to the present and future population of NMC by the year 2011-12 is Rs. 5894 crores (at current prices). More than 70% of the investments proposed under the CIP are dedicated to the sectors of

MRTS and traffic management, slum development/housing, and roads and bridges. The water and sewerage sectors have been allocated 10% and 8.7% respectively of the total investment.





Summary of Capital Investments

	Sector	Total investment need (Rs. crs)	% Sector-wise of total
1	Water supply and distribution	590	10
2	Sewerage	515	8.7
3	Storm water drainage	246	4.2
4	Solid waste management	50	0.8
5	Slum development/housing	1592	27
6	Water recycling and reuse	250	4.2
7	Road and bridges	1086	18.4
8	MRTS and traffic management	1550	26.3
9	Social amenities	15	0.3
	Grand total	5894	100

Sector		Source of Funding			
	In Rs. crores	PPP	State Govt.	MHADA/ NIT	NMC/ JNNURM
Water supply and distribution	590	_	_	_	590
Sewerage	515	_	_	_	515
Storm water drainage	246	_	_	_	246
Solid waste management	50	_	_	_	50
Slum development / housing	1592	1,100	_	417	75
Water recycling and reuse	250	250	_	_	_
Roads	1086	_	650	_	436
MRTS and traffic management	1550	1,500	_	_	_
Social amenities	15	_	_	_	15
Grand total	5894	2,850	650	417	1,977

The CDP has identified projects, which are estimated to cost Rs.5894 crores at current prices. However, JNNURM grants, internal accruals of NMC and debt can together fund projects worth Rs.2273 crores at escalated prices,

factoring in the price escalation on the project costs over the six year period. The source of Rs. 2273 crores would be as follows:

CIP funding pattern

Source of funding	Source	Amount (Rs. Crores)	% of Total Investment
GoI Grants	JNNURM	1137	50.0
GoM Grants	JNNURM	455	20.0
Loan	Open Market/ FIs	185	5.6
Own sources	NMC	496	24.4
Total		2273*	100.0

^{*}This is the escalated cost while at current prices the cost is Rs1977 crores.

NMC has identified opportunities for bridging the investment deficit. Some of the identified projects like MRTS and water recycling and reuse can be funded through the public private partnership (PPP) route. The investments in these two projects aggregate to Rs.1750 crores at current prices. Thus, NMC through internal accruals, debt, JNNURM funding and PPP model be able to fund projects worth Rs.3727 crores (Rs.1977 crores + Rs.1750 crores). The balance projects would be executed by MHADA, NIT, SRA and Maharashtra state government.

The Way Forward

The JNNURM scheme marks an important milestone in the development of urban infrastructure and the reform agenda of the Government of India. It provides an opportunity for municipal corporations to fill the increasing gap between existing and desired service delivery, even as the pressure on urban infrastructure mounts. It is indeed a stepping-stone for municipal corporations to achieve improvements in service delivery, governance and financial sustainability.

It is not so much the philosophy of JNNURM that will demand performance from cities. Peer cities will create pressure by setting examples and raising the bar. It would no longer suffice to initiate a reform at the city level and stay content with the progress. The quality of reforms would be constantly benchmarked with those of its peers; the pace of progress would be measured against the standards set by first movers.

A successful application for JNNURM in the form of the preparation of the CDP is barely the beginning. The amount and extent of benefits, which will accrue to the Nagpur Municipal Corporation (NMC) and the real development of the Nagpur city as a whole will depend upon the progress of the commitments made by NMC, both in service delivery outcomes and in reform implementation suggested as part of CDP. In order to achieve the vision and stated mission, NMC has to focus on the following three areas:

- Implementation of the City Development Plan
- Challenges in the future
- Opportunities for Nagpur and NMC

Implementing the CDP

The implementation of the CDP has two dimensions: the reform dimension and the investment dimension. From the point of view of the reform dimension, NMC is in a fairly good position. It has achieved a fair level of progress in the areas of accounting reforms and e-Governance. However, it will need to accelerate its efforts in the areas of property tax and the levy of appropriate user charges. From the investment angle, currently, NMC has been

investing and implementing capital works to the tune of about Rs.80 crores per annum. With the advent of JNNURM, the Corporation will have to undertake projects of around Rs.600 crores every year. This will require tremendous capacity building within the Corporation.

Challenges in the future

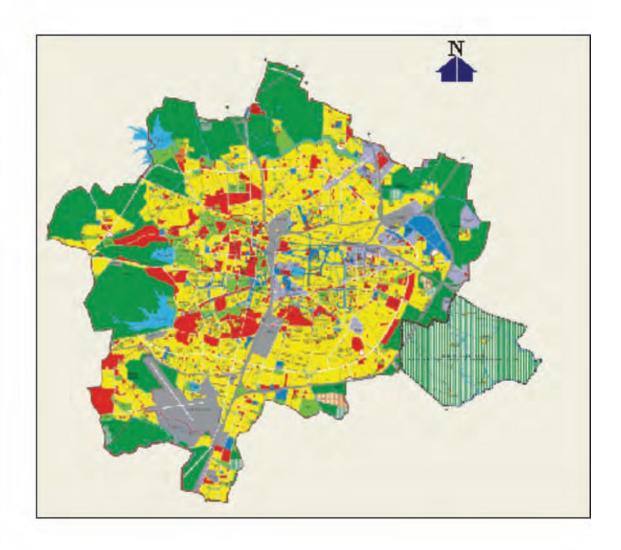
Nagpur is still considered one of the tier II cities of the country. Of late given the good quality of urban infrastructure like roads and being considered an important centre of learning, particularly in the field of engineering, Nagpur is slowly catching the attention of many corporate houses in the country. The favorable mention of Nagpur in the KPMG-NASSCOM survey and IDC-Dataquest study testifies to the economic potential of Nagpur. This, when combined with the MIHAN project, has the ability to power Nagpur's economy in the coming years. The higher economic growth and relatively better quality of life enjoyed by Nagpur's citizens will increase the net migration to the city. This will result in a higher population growth rate than what Nagpur has experienced in recent decades. This will further increase the pressure on urban services and possibly the quality of life in Nagpur will deteriorate as it has in every other major city in the country. The challenge before NMC is to transit from being a tier 2 city to a tier 1 city without breeding the ills that plague the tier 1 cities in the country.

Opportunities for Nagpur and NMC

The city of Nagpur has several opportunities and the Corporation should build on these opportunities. Here is a description of opportunities, which Nagpur can capitalize. Nagpur, next to Pune, has the largest number of engineering colleges in and around a city in Maharashtra. Unfortunately, the students graduating from these colleges often do not find jobs matching their profiles in Nagpur. This leads to migraton of a talented class of Nagpur's residents. The challenge for Nagpur city is to create jobs in the city, which will retain this talented pool and spur them to contribute to the further growth of the city. The possibility of technology majors like Satyam Computers and aircraft manufacturer Boeing setting up shop augurs well for the city. For greater sustainability, linkages between industry and institutions must be established and nurtured.

In its resolve to become a well-developed city, NMC should not lose focus on the 36% slum population of the city. The challenge before the city is to ensure that basic services including housing be provided in an equitable fashion to all sections of society. NMC's important role in providing primary and secondary education to the economically weaker sections should not be overlooked. A workforce empowered with basic education can capitalize on the growth opportunities created in the city.





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Nagpur Municipal Corporation







NAGPUR CITY DEVELOPMENT PLAN



Nagpur Municipal Corporation

Technical assistance by



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List of Abbreviations

ARV Annual Rental Value

CAGR Compounded Annual Growth Rate

CDP City Development Plan

CIP City Investment Plan

CLIP City Lighting Improvement Project

EWS Economically Weaker Section

FOP Financial Operating Plan

Ha Hectare

IRDP Integrated Road Development Project

JNNURM Jawaharlal Nehru National Urban Renewal Mission

LIG Low Income Group

LPCD Litres Per Capita Per Day

MHADA Maharashtra Housing and Area Development Authority

MIHAN Multi-modal International Hub Airport at Nagpur

MLD Million Litres per Day

MoA Memorandum of Agreement

MPCB Maharashtra Pollution Control Board

MSRTC Maharashtra State Road Transport Corporation

MT Metric tonnes

NIT Nagpur Improvement Trust

NMC Nagpur Municipal Corporation

PPP Public Private Partnership

SAS Self Assessment Scheme

SEZ Special Economic Zone

SRA Slum Rehabilitation Authority

SWM Solid Waste Management

UDPFI Urban Development Plans Formulation and Implementation

1. EXECUTIVE SUMMARY

The cities and towns in India are expected to play a vital role in the country's socio-economic transformation, as the engines of economic growth and the centre-points of innovation. But the current state of affairs in most of our urban areas is far from satisfactory on all parameters of urban governance. Most municipalities are starved of resources on account of their inability to effectively use their revenue-raising powers.

Given this state of affairs, the Government of India launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in FY 2005-06. The mission will be in place for the next seven years; it aims at creating economically productive, efficient, equitable and responsive cities. The Mission focuses on the development of appropriate enabling frameworks, enhancement of the creditworthiness of municipal governments and integration of the urban poor with the service delivery systems.

In order to be eligible for grant assistance under JNNURM, the Government of India requires eligible cities to formulate a medium-term City Development Plan (CDP) in alignment with citizens' interest and priorities, prepare project proposals in accordance with the CDP, and draw up a timeline for implementing urban sector reforms. The Indo-US FIRE (D-III) project has selected Nagpur as one of the pilot cities to formulate the CDP as per the JNNURM process. In this context, Indo-US FIRE (D-III) has employed the services of CRISIL Infrastructure Advisory to facilitate the preparation of the CDP for Nagpur.

The City Development Plan (CDP) is the Municipal Corporation's corporate strategy that presents both a vision of a desired future perspective for the city and mission statements on how the Corporation, together with other stakeholders, intends to work towards achieving the vision in the next five years. It should translate the Mission into actions and actions into outcomes. The objective of involvement of the stakeholders and endorsement by the local body and other implementing agencies is to hold them accountable for their mission statements, actions and expected outcomes.

The CDP process adopted by Nagpur

The Nagpur CDP has been developed in close consultation with stakeholders over 13 weeks starting from mid-January 2006. The process was divided into three phases.

The first phase started with a rapid city-assessment of Nagpur and identification of the city's strengths, weaknesses and opportunities. This was followed by several capacity building sessions for NMC officials, officials of other government departments and groups of stakeholders including business groups, trade associations, citizens' clubs and NGOs. The objective was to inform them about JNNURM and the process of preparing the CDP. In order to reach out to a larger section of people, workshops were also conducted for representatives of the press and the electronic media. Suggestions and comments were solicited from citizens by way of newspaper articles, interviews, essay writing competition among school children, emails, 'CDP suggestion boxes' kept in every NMC ward office and the like.

The vision and mission workshop with NMC officials (first workshop) focused on the key issues confronting each department, the officials' vision for the city and an action plan to realize the vision. As a follow-up to the workshop, several stakeholders were interviewed

individually and their ideas for the city's economic growth and improvement of the quality of life of its people were sought. Phase I concluded with a workshop (second workshop), in which NMC officials and stakeholders together carried out a visioning exercise. Participants were divided into groups, each representing a focus area¹. Vision and mission statements were suggested by each group and action groups were also identified for each mission statement.

The second phase started with focussed group discussions with stakeholders to define actions needed to achieve each mission statement. Based on the discussions and experts' comments, a draft action plan was prepared. Simultaneously, a citizens' survey was conducted through an independent research agency to assess the performance of NMC. The survey also aimed at assessing citizens' perception of slums, their suggestions regarding the improvement of service levels, their willingness to pay for them and finally their vision for the city. Simultaneously, credit strength assessment of NMC was also done to determine its creditworthiness and to identify financial reforms required to sustain various investments proposed by NMC under JNNURM. Phase II concluded with a stakeholders' workshop (third workshop) at which the stakeholders refined and prioritised the strategies and action plans for their respective groups.

The last phase of the CDP preparation process involved assessment of detailed project costing, determination of funding sources and identification of risk management measures. Priority actions scheduling was also done for all the prioritized projects/actions based on resource availability along with the preparation of a Capital Investment Plan (CIP) for the identified projects. The corresponding Financial Operating Plan was also prepared, outlining the preliminary budget, financing assumptions and responsibilities for implementation and financing. All these were integrated into a draft CDP and presented in the fourth and last workshop held on 8th May 2006. The implementation issues relating to the CIP were discussed at the workshop. Based on the discussions in the workshop, this final CDP document was prepared.

About Nagpur

Nagpur has always enjoyed the status of a capital city that continues till date; it is the winter capital of the Maharashtra state. It completed 300 years of establishment in 2002. Nagpur's population (Census of India, 2001) is about 20.5 lakhs with an average density of 95 persons per hectare, which is quite low compared to other comparable cities of India. It is estimated that one-third of the city's population lives in slums. There are about 427 slum pockets in the city spread over an area of about 17 sq. km. Of the 427 slums, 292 slums are notified slums housing 80% of the slum population.

The population trends of Nagpur city show a declining growth rate over the decades; it has decreased from 48.3% in 1921-31 to 32.6% in 1991-2001. Based on the linear projection method, the growth rate may decline to 22.2% in the next three decades (2021-31). The attractiveness of the city for migrants has also been decreasing. In the last decade (1991-

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¹ The eight groups were 'Water supply, sanitation, sewerage and solid waste management', 'Roads, traffic and transportation', 'Land use and housing', 'Urban poor and slum development', 'Urban environment, gardens and conservation of water bodies', 'Local economic development', 'Education, health and social infrastructure' and 'Tourism, culture and heritage'.

2001), about 46% of the population growth was due to in-migration; in the last four years, the figure has declined to 24%. But, considering the development projects and investments in the pipeline, Nagpur's growth rate may revive and the population may double at a faster pace. Nagpur needs to plan for its infrastructure accordingly.

Nagpur shows favourable demographic characteristics. The sex ratio in Nagpur is quite healthy at 936, which nearly equals the all-India figure of 933. About 84% of Nagpur's population is literate as per Census 2001. 66 percent of the city's population is under the age of 40; the 10-25 year age group forms the largest proportion of the total population. This offers a valuable resource for economic development of the city. But, at the same time, if not given optimum opportunities, the tendency to migrate will probably be the highest in this age bracket.

City with latent economic potential

Though Nagpur is an important administration centre with an advantageous geographical location, Nagpur's economic development has been constrained by the limited development of the hinterland of central India. What has probably held back economic growth in the past is the lack of priority given to the region by successive state governments. As of April 2000, the developmental backlog of the region was Rs. 9830 crores.² However, with technological developments and overall development of the central hinterland, the scenario is set to change.

Nagpur has all the ingredients for emerging as a high quality service centre. The region around Nagpur has a large number of engineering colleges with about 8,600 engineering students graduating every year. This renders Nagpur an attractive location for the IT-ITES industry³. Nagpur's unique location also makes it a logical and ideal location for a passenger and cargo hub given its strategic position in national and international railway and aviation routes. It may also work on its potential to develop into a significant medical hub, tourism gateway to the hinterland and a power generation centre for the region.

A possible trigger for Nagpur's efflorescence is the Multimodal International Hub Airport at Nagpur (MIHAN) project. Besides an international airport, the proposed project envisages the creation of a road-rail terminal, a special economic zone (SEZ) and other urban amenities to meet the needs of the working population in around the proposed airport. The SEZ will provide the right platform for exploiting the latent economic potential of the city, which has the potential to create over 1.2 lakhs jobs.

As a part of the preparation of the City Development Plan, an assessment of Nagpur city has been carried out to understand the city's present status, the direction in which it has been moving, and its strengths and weaknesses. The assessment covers the city's basic infrastructure (physical and environment), institutional structure and finally, the financial status of the municipal corporation.

² Human Development Report Maharashtra 2002

³ A Dataquest-IDC study of the top ten IT cites in India ranked Nagpur seventh, based on parameters such as manpower availability, information, communication and technology (ICT) infrastructure availability and usage, lifestyle and environment. Also, as per the KPMG – NASSCOM survey, Nagpur is one of the top four tier II cities that have a huge potential for information technology and IT enabled services.

Assessment of the existing infrastructure and physical environment

The study encompassed all the vital aspects of infrastructure – water supply, sewerage, storm water drainage, solid waste management, roads and public transport, street lighting, education, access of slum dwellers to basic services, land use, and lakes and rivers. Here is a summary of the findings.

Water supply

NMC sources 470 MLD mainly from surface sources. Currently, it meets demand, but with population growth it may face a deficit situation by 2011. NMC has already started making plans for augmenting the sources. Post bulk water treatment point, per capita supply of water is 200 lpcd, which is well above the prescribed norms. Though no figures are available for actual supply at household level, it is known that treatment and transmission and distribution losses are very high. Supply is also dissatisfactory in terms of the number of hours of water supply and water pressure. Overall, the water quality of piped supply is good but that of ground water sources is unacceptable in terms of hardness, pH and nitrates. The operational expenses for water supply services have been exceeding the revenues each year.

Sewerage system

The current sewerage system covers only 60% of the city and suffers from frequent problems of choking and over-flowing. Pumping and treatment facilities are grossly inadequate; out of 235 MLD, only 100 MLD is collected and treated. The system is divided into three zones – north, south and central. The situation is worse in the north zone. Less than 50% of the sewage is collected, which is disposed into the rivers without any treatment.

Storm water drainage

The city's natural drainage pattern is excellent, with suitable topography and a natural gradient. There are two major natural streams – Nag and Pilli and several connecting nallahs running across the city. But with construction and man-made alterations, the natural system has been inadequate and needs to be supplemented by a scientific drainage system. Currently, only 30-35% of the roads have storm water drains. These also carry sewage and hence often get choked and flooded. Both coverage and design need to be improved.

Solid waste management

The collection levels of solid waste are good. 75% of the waste is collected through door-to-door collection services under the 'Swatchata Doot Aplya Dari' system, a NGO–NMC partnership initiative. Contracts for road sweeping have also been given out to NGOs and private agencies. In spite of several awareness campaigns, the segregation of waste at source is not practised. Overall, citizens are satisfied with collection services and cleanliness levels. The main area of concern with respect to solid waste management in Nagpur is the disposal mechanism; no scientific method of disposal is followed.

Roads and public transport

The Integrated Road Development Project (IRDP) revolutionised the roads in the city, which now enjoy an excellent status, in terms of both coverage and quality. Vehicle ownership is quite high; there are 4.6 lakhs registered vehicles and 280 are being added every day. But the corresponding infrastructure in terms of parking facilities is highly inadequate. Also, the road conditions being excellent, the average travel speed is quite high at 25 km. per hour making road safety a cause of concern. Considering the population and spread of the city, the public transportation system is highly inadequate.

Street lighting

Under the Integrated Road Development Project (IRDP), the City Lighting Improvement Project (CLIP) was introduced for improving street lighting. The corporation has delegated the entire work of managing the tube lights and other fixtures to various contractors in different wards. The attempt has been highly successful. Currently, the service levels are amongst the best performing amongst Indian cities.

Education and medical infrastructure

NMC runs primary schools, which mainly cater to the low-income population. The service levels and infrastructure of these schools is inadequate. In the last few years, a number of private educational institutions have sprung up, providing high quality services to the city. The city also boasts a large number of institutions for higher education, with students coming from all across the country. About 1250 students are enrolled in the 12 medical colleges and 3192 students are completing their education in the 15 engineering colleges nurtured by the city.

With respect to medical infrastructure, a large number of government and private facilities are available across service levels and categories. The city caters to the entire region with patients coming from neighbouring states. The service levels need to be improved in the government-run facilities.

Access of slum dwellers to basic services

There are 427 slum pockets in Nagpur housing 40% of its population, with a high growth of 22% in the last eight years. Also, almost 50% of the population was below poverty line in 2005. Exact statistics regarding access to basic services by the urban poor is not available with NMC, but stakeholder discussions have revealed some of the key issues in this context. Vulnerability to flooding in low-lying settlements, low ability to pay for basic services, negligence towards informal sector establishments in the planning process and lack of consultations with the stakeholders while planning for the urban poor are a few of these. Of 427, 292 slum pockets are notified. Some of these already have good living conditions, infrastructure and *pucca* housing. These should be de-notified to ensure focused investments in the less developed pockets. For slum re-development, slum rehabilitation schemes are being planned under public-private partnership arrangements.

Land use

The data for the exact land use pattern in NMC limits is not available. As per the development plan 1986-2011, the proposed land use distribution adheres to UDPFI (Urban Development Plan Formulation and Implementation) guidelines. Discussions with NMC and Nagpur Improvement Trust (NIT) officials reveal that the land demand supply situation is well-balanced in the city. In terms of FSI, there is a large scope for development in the future. A similar situation exists in terms of housing stock as well. Implementation and regular updation of byelaws needs to be done to support the anticipated economic surge.

Urban environment

There are several water bodies in the city including 12 lakes, two rivers and five nallahs. Though exact data is not available, it has been observed that these water bodies are highly polluted. Stakeholder consultations have revealed that the lakes are being filled up or encroached upon, adversely affecting the bio-diversity of the area. NMC/NIT has already initiated some beautification and recreational projects around the lakes and rejuvenation

projects are also being planned. In terms of other forms of pollution, i.e. air and noise pollution, levels are well within the prescribed limits with a few exceptions.

Assessment of institutional structure of urban governance

As per the City of Nagpur Corporation (CNC) Act, 1948, the key responsibility for providing basic urban services in Nagpur lies with the NMC. These services include water supply, sewerage, waste management, slum improvement, land use planning, construction and maintenance on internal roads, street lighting, maintenance of parks and gardens, and provision for primary health and education facilities. NMC co-ordinates with various other government organizations like NIT, Maharashtra Housing and Area Development Authority (MHADA), Maharashtra State Road Transport Corporation (MSRTC), traffic police and Maharashtra Pollution Control Board (MPCB) for delivering these basic urban services. NMC has also entered into public-private partnership contracts for the delivery of some its services.

As per the Government of Maharashtra notification, dated 27th February 2001, NMC has been permitted to exercise the powers of a Planning Authority in the entire area under its jurisdiction except the areas covered by the seven NIT schemes. Hence, in the current institutional arrangement, the significance and viability of NIT has become minimal. Considering this, there is a need to constitute a planning authority for the urban agglomeration, supported with modern land management legislations.

MSRTC has the responsibility of providing bus transport services in Nagpur. But it has turned out to be a loss-making operation, which is straining its already fragile financials. MSRTC is willing to transfer responsibility to NMC, but even NMC does not have the financial or managerial capacity to provide urban transport services. This has led to considerable deterioration in service levels in the city.

Assessment of Nagpur Municipal Corporation's finances

Parallel to the infrastructure and institutional assessments, an evaluation of the financial status of NMC has also been carried out. The assessment indicates the corporation's capacity and ability to manage its financial resources so as to maintain urban services at the prescribed levels. In 2004-05, NMC's revenues registered a compounded annual growth rate (CAGR) of 6.9%, while revenue expenditure increased at a CAGR of 9.0%. But, due to a strong revenue base, there was a revenue account surplus of Rs.78 crores and an overall surplus of Rs.18.98 crores (including capital account).

Revenue income is earned from own and external sources. Among own sources, the largest source is octroi (47%) followed by property tax (18%). There is a further scope to improve revenues under this head by improving the collection efficiency (currently 52%) and widening the tax base. Establishment cost is the largest item (66%) under revenue expenditure and is growing at a rate higher than that of revenue income.

In 2004-05, a capital expenditure of Rs. 79 crores was incurred, mainly covering water supply, public works and roads. The cost recovery of services varies across sectors. In the case of water, revenue expenditure exceeds revenue income each year, making it financially unsustainable. Currently, sewerage charges exceed the O&M expense on the sewerage system. But the current coverage of the system is quite low. As the system expands to cover

100% of the city, the current tax rate for sewerage would prove insufficient. For solid waste management, NMC incurs an expense of Rs. 5.5 per month per household. NMC plans to recover this gradually from the households.

After completing the rapid assessment of the city's infrastructure, physical and environmental aspects, and institutional and financial status, a consultative process was initiated with a capacity building session for NMC officials and city stakeholders to develop a vision and strategy for Nagpur's future developments.

Vision for the city

As a result of workshops and numerous consultations with NMC officials and stakeholders in Nagpur, the vision for Nagpur is emerging as follows:

The Growth Nucleus of Central India

... An eco city that provides adequate, equitable, sustainable access to urban services for all citizens

... A city that is safe, livable and promotes growth of its citizens

The workshops have also indicated that to achieve this vision, NMC would support the theme of Nagpur attaining a key position in IT, ITES and health services related industries. It would also support industrialization in its hinterland and promote education, culture and tourism. To achieve the growth and vision described above, certain mission statements were also defined for every focus area. Some of the key mission statements are given below:

- 100% coverage in water supply and improved service levels
- 100% coverage in sewerage collection
- Improved road safety and better traffic management through provision of flyovers, bridges, parking facilities, etc.
- 100% solid waste collection efficiency and disposal of waste in an environmentally friendly manner

Strategies for achieving Nagpur's vision

Based on close consultations held with various action groups (identified in the visioning workshop), a list of strategies was carefully drawn up and prioritised based on expected outcomes and target group preferences. The strategies related to the areas of local economy, water supply system, sewerage and storm water drainage system, solid waste management, roads and public transport, education and medical facilities, slums and urban poor, urban environment, land use and housing, and culture and heritage. The strategies are summarised below.

Local economy

Agro-processing, steel and allied industries, textiles, transportation and IT are some of the industries that can drive the economy of the city and its surrounding regions. The MIHAN project is expected to galvanise several economic activities in the region and also market the economic potential latent in the city. NMC also has an important role to play in fostering an environment, which is conducive to business. It would provide a single window to all

business and commercial groups to deal with matters pertaining to various civic services and approvals, simplify the processes and offer incentives to target industries in the form of lower octroi and land concessions.

Water supply system

The suggested mission statement for water supply services is "Water for all and 24 x 7 supplies with focus on safety, equity, and reliability". To achieve this target, additional schemes need to be designed for sourcing more surface water. Rainwater harvesting should be made compulsory for all new building projects to supplement the ground water. In the interests of reducing transmission and distribution losses, NMC should refurbish the old distribution system, conduct leak detection studies, identify illegal water connections and discourage public stand posts (PSP). All households should be provided with metered connections to increase coverage to 100% and volumetric billing should be introduced to discourage wastage. Finally, NMC can control its operational expenses by conducting an energy audit, which accounts for the bulk of its operational expenses.

Sewerage and storm water drainage system

The mission statement for the sewerage and storm water drainage system has been defined as "100% coverage of sewage collection and treatment, and strengthening and rejuvenation of the natural drainage system". NMC must extend the sewerage system to the entire city and provide individual connections to all households/constructed units. The proposed sewerage system must ensure that no sewage is disposed untreated into the water bodies in and outside the city. To provide universal access to clean and affordable sanitation facilities at public places, NMC should encourage the 'pay and use' category of public conveniences through public private partnership arrangements and community involvement in the maintenance of the same. NMC must focus on the rejuvenation of the Nag and Pilli Rivers, nallah canalization and the consequent strengthening of the natural drainage system. All the roads must have storm water drains to prevent flooding during peak periods.

Solid waste management

The suggested mission statement for SWM is "Clean city and bin-free city". NMC should make serious attempts to ensure 100% segregation at source through awareness campaigns or the introduction of penalty fees. The current waste dumping practices must be replaced with scientific waste disposal methods. Decentralised waste-to-energy projects should also be explored to improve the financial viability of the system.

Roads and public transport

The city's transport network should be made complete in terms of hierarchy and accessibility, for efficient movement of traffic. In order to control the growth of private modes in the traffic stream, the city needs an efficient public transport system. It would be ideal to develop a high frequency mini-bus based transport system sustained by eco-friendly fuels. NMC should explore the possibility of fully taking over the operation license from MSRTC. It can even explore the possibility of private participation in the operations. A specific traffic management plan should be designed for problem areas and junctions. Signals, signage and marking also need to be upgraded. Development of parking plazas should get priority in development. Facilities for pedestrians such as footpaths, railings and refuge islands at medians also need to be improved.

Education and medical facilities

NMC's role is limited to primary level services in the area of provision of medical and educational infrastructure. To promote higher-level education and medical facilities, it must provide a conducive environment for other government agencies and private developers in the form of support infrastructure, incentives, etc.

Future steps towards improvement in health care facilities should be based on shift from a target-oriented to community-oriented approach, participatory planning in medical care, emphasis on quality health care and client satisfaction and preventive health care measures. To achieve its mission of 'making Nagpur a medical services hub', NMC should encourage and provide incentives for the setting up of multi-speciality hospitals in the form of access to affordable land, exemption of octroi on equipment and medicine, subsidy on water rates and taxes, convention centre facilities, etc.

Slums and urban poor

A "slum free city" was identified as the sector vision by the 'Slums and urban poor' group. As per the stakeholders, access to basic services for slum dwellers must be ensured and slum rehabilitation programs should be focused upon. More EWS/LIG housing should be provided by the government. Other facilities like public toilets, night shelters, destitute children's homes, beggars' homes, working women's hostels and marriage halls should also be provided.

Simple strategies like the reservation of land for EWS housing with adequate enforcement and adequate financial provisioning can ensure the creation of sufficient and affordable housing stock in the city. Perhaps the most important change needed to manage Nagpur's slums is fostering a collaborative partnership between the local authorities and communities, with strong support from the government. These federations should be involved as equal partners from the beginning of the planning processes. Strategies for improving security of tenure are central to the improvement of the lives of slum dwellers and land use in urban areas. This may require reform of tenure and land use legislation, coupled with new legislation to prevent forced eviction.

For the implementation of the Slum Rehabilitation Authority (SRA) scheme, it is essential to create an updated database on the conditions of the slum settlements. It is critical to prioritize slums to be considered under the SRA scheme through consultation and public opinion. Wherever SRA is not viable and space constraints are high, in-situ improvement measures can be taken up.

Urban environment

Nagpur has been known as a "clean and green city." It is imperative to preserve this image. To retain the healthy status of Nagpur's urban environment, several planning and conservation initiatives need to be undertaken. This could be achieved through the proper zoning of activities, provision for sufficient breathing space in new developments and adoption of proper landscape design practices at the city level. It is important to devise a plan, which can check the growth of unauthorized developments, especially within the city's precincts. To ensure sustainable development with optimum resource utilization, it may be necessary to develop a regional plan that envisages a balanced relationship between the main city and surrounding regions. A comprehensive water body restoration or revival program in the region is of utmost importance. The lake conservation program should also explore the possibilities of reviving lakes as water sources or points of interest in the city.

Land use and housing

The stakeholders have defined the mission statement as "modern land management practices that promote economic development in an environmentally sustainable manner". Efforts should be made to decongest core areas through selective relocation of commercial and trading activities. High-density high-rise provision must be made in the old city limits to free space for infrastructure development, road widening etc. NMC must discourage development in critical, ecologically sensitive areas. Development Control Rules (DCR) should be made applicable to these areas to restrict encroachments and unauthorised developments. Based on the compatibility of land uses, detailed studies should be carried out to identify corridors where densification is possible. In selected areas, specific nodes should be identified along high growth routes and developed as high density commercial and entertainment centres; the concept of paid FSI must also be explored. NMC and NIT should encourage builders and developers to develop mass housing by offering suitable incentives. Peripheral area (metropolitan region) development needs to be focussed and integrated with transportation networks through the coordinated efforts of NMC and NIT. For integrated fringe area development, a Metropolitan Planning Committee should be constituted for the Nagpur metropolitan region. This agency should be well-equipped with necessary capacity, in terms of both skills and supporting legislation, for effective planning and management. The efforts of this agency must be systematically co-ordinated with those of NMC.

Culture and heritage

The stakeholders have defined the mission statement for this action area as "Nagpur: Gateway to the tiger country". Nagpur should not only act as an entry point to the Vidarbha region, which holds great tourism potential, but also be seen as a tourism destination itself. Firstly, NMC should prepare a heritage conservation plan. This should be harmonised with various other actions plans for land use, transportation, environment, etc. The plan may be supported by a heritage conservation policy for the city, covering aspects of documentation (status and condition of the heritage structures), strategy (what needs to be done) and implementation (how it should be done). To ensure the successful implementation of this plan, it is important to imbibe a sense of ownership of the heritage structures in various stakeholders. There is a need to create a separate fund for these conservation activities from the budgetary allocations of NMC. Tourism may be developed on themes of heritage, wildlife, religion, health or education. Adequate facilities should be provided to tourists in terms of affordable accommodation, information and booking services, and inter-city and intra-city transport.

Though one of the main aims of JNNURM is to finance the infrastructure investments identified as part of CDP, the larger objective of the mission is to initiate much-needed reforms in ULBs.

Reform agenda for Nagpur

JNNURM specifies that in order to avail of its funding, the State Government and the urban local bodies (ULBs) have to execute a range of reforms. The proposed reforms fall into two categories: Mandatory Reforms and Optional Reforms.

Mandatory Reforms at ULB level	Status of implementation
1	Currently being implemented by NMC
double entry system of accounting	

Mandatory Reforms at ULB level	Status of implementation
Introduction of a system of E-governance	Project has been initiated by NMC, is expected to be completed by March 2007
Reform of property tax with GIS, so that it becomes a major source of revenue, and arrangement for its implementation so that collection efficiency reaches 85 per cent	GIS mapping of properties is currently being implemented. Property tax reform has been initiated and would be implemented by March 2008.
Levy of reasonable user charges with the objective of ensuring full collection of cost of operation and maintenance within the next five years Internal earmarking within local body budgets for basic services to the urban poor	Currently NMC recovers only partial user charges in water supply. NMC plans to gradually increase the same to collect full cost of operation and maintenance by March 2011. NMC plans to collect full user charges for assets created under JNNURM. Five percent of the budget is earmarked for the provision of services for urban poor under various schemes covering water and sanitation, roads, streetlights, education, primary health care centres, etc. Expenditures on the same are indicated under a separate head in the budget.
Provision of basic services to the urban poor	NMC provides education through schools and health services through primary health care centres to the urban poor. Access to basic services in slums is provided through various schemes of NMC, and slum upgradation programs are undertaken under the aegis of SRA. In addition, NMC also undertakes regularisation and rehabilitation of pre-1995 slums as per the Government policy.

The above form the list of mandatory reforms to be implemented at the ULB level. NMC has complied with all the major requirements of JNNURM. Hence, it holds a good chance of qualifying for funding under JNNURM.

In addition, NMC has achieved considerable progress in the category of optional reforms prescribed for ULBs.

Optional Reforms at ULB level	Status of implementation
Revision of bye-laws to streamline	Revisions have been undertaken and the process has
the approval process for construction	been simplified.
of buildings	
Earmarking at least 20-25 percent of	Partially achieved under ULCRA, which has a
developed land in all housing projects	provision for government share in land development
for EWS and LIG category with a	to provide housing for EWS and LIG categories.
system of cross subsidisation	
Revision of bye-laws to make	Implemented
rainwater harvesting mandatory in all	
buildings and adoption of water	
conservation measures	
Bye-laws for reuse of recycled water	A project for reuse of recycled water is planned and
	a DPR for the same is under preparation. Draft
	policy for the reuse of recycled water is being

Optional Reforms at ULB level	Status of implementation			
	formulated and the same will be submitted to the			
	government for approval. NMC expects the same to			
	be implemented by March 2008.			
Administrative reforms	Shall be implemented in a phased manner over the			
	period April 2007 to March 2011.			
Structural reforms	Shall be implemented in a phased manner over the			
	period April 2007 to March 2011.			
Encouraging PPP	NMC has already experimented with private sector			
	participation in various areas. Some of the initiatives			
	involve the proposed laying of pipeline through			
	BOT; development of commercial complexes,			
	amusement parks and market centres on a BOT			
	basis; PPP in slum rehabilitation; community			
	participation in collection of solid waste, etc.			

City Investment Plan and strategies

The total estimated capital investment required for providing efficient services to the present and future population of NMC by the year 2011-12 is Rs. 5894 crores (at current prices). More than 70% of the investments proposed under the CIP are dedicated to the sectors of MRTS and traffic management, slum development/housing, and roads and bridges. The water and sewerage sectors have been allocated 10% and 8.7% respectively of the total investment.

Summary of Capital Investments

	Sector	Total investment need (Rs. crs)	% Sector-wise of total
1	Water supply and distribution	590	10
2	Sewerage	515	8.7
3	Storm water drainage	246	4.2
4	Solid waste management	50	0.8
5	Slum development/housing	1592	27
6	Water recycling and reuse	250	4.2
7	Road and bridges	1086	18.4
8	MRTS and traffic management	1550	26.3
9	Social amenities	15	0.3
	Grand total	5894	100

Sector		Source of Funding			
	In Rs	PPP	State Govt	MHADA / NMC /	
	crores	111	State Gove	NIT /	JNNURM
Water supply and distribution	590	-	-	-	590
Sewerage	515	-	-	-	515
Storm water drainage	246	-	-	-	246
Solid waste management	50	-	-	-	50
Slum development / housing	1592	1,100	-	417	75
Water recycling and reuse	250	250	-	-	-
Roads	1086	-	650	-	436
MRTS and traffic management	1550	1,500	-	-	50
Social amenities	15	-	-	-	15
Grand total	5894	2,850	650	417	1,977

The CDP has identified projects, which are estimated to cost Rs.5894 crores at current prices. However, However, JNNURM grants, internal accruals of NMC and debt can together fund projects worth Rs.2273 crores at escalated prices, factoring in the price escalation on the project costs over the six year period. The source of Rs. 2273 crores would be as follows:

CIP funding pattern

Source of funding	Source	Amount (Rs. Crores)	% of Investment	Total
GoI Grants	JNNURM	1137		50.0
GoM Grants	JNNURM	455		20.0
Loan	Open Market/ FIs	185		5.6
Own sources	NMC	496		24.4
Total		2273*		100.0

^{*}This is the escalated cost while at current prices the cost is Rs1977 crores.

NMC has identified opportunities for bridging the investment deficit. Some of the identified projects like MRTS and water recycling and reuse can be funded through the public private partnership (PPP) route. The investments in these two projects aggregate to Rs.1750 crores at current prices. Thus, NMC through internal accruals, debt, JNNURM funding and PPP model be able to fund projects worth Rs3727 crores (Rs.1977 crores + Rs1750 crores). The balance projects would be executed by MHADA, NIT, SRA and Maharashtra state government.

The Way Forward

The JNNURM scheme marks an important milestone in the development of urban infrastructure and the reform agenda of the Government of India. It provides an opportunity for municipal corporations to fill the increasing gap between existing and desired service delivery, even as the pressure on urban infrastructure mounts. It is indeed a stepping-stone for municipal corporations to achieve improvements in service delivery, governance and financial sustainability.

It is not so much the philosophy of JNNURM that will demand performance from cities. Peer cities will create pressure by setting examples and raising the bar. It would no longer suffice to initiate a reform at the city level and stay content with the progress. The quality of reforms

would be constantly benchmarked with those of its peers; the pace of progress would be measured against the standards set by first movers.

A successful application for JNNURM in the form of the preparation of the CDP is barely the beginning. The amount and extent of benefits, which will accrue to the Nagpur Municipal Corporation (NMC) and the real development of the Nagpur city as a whole will depend upon the progress of the commitments made by NMC, both in service delivery outcomes and in reform implementation suggested as part of CDP. In order to achieve the vision and stated mission, NMC has to focus on the following three areas:

- Implementation of the City Development Plan
- Challenges
- Opportunities for Nagpur and NMC

Implementing the CDP

The implementation of the CDP has two dimensions: the reform dimension and the investment dimension. From the point of view of the reform dimension, NMC is in a fairly good position. It has achieved a fair level of progress in the areas of accounting reforms and e-Governance. However, it will need to accelerate its efforts in the areas of property tax and the levy of appropriate user charges. From the investment angle, currently, NMC has been investing and implementing capital works to the tune of about Rs.80 crores per annum. With the advent of JNNURM, the Corporation will have to undertake projects of around Rs.600 crores every year. This will require tremendous capacity building within the Corporation.

Challenges in the future

Nagpur is still considered one of the tier II cities of the country. Of late given the good quality of urban infrastructure like roads and being considered an important centre of learning, particularly in the field of engineering, Nagpur is slowly catching the attention of many corporate houses in the country. The favorable mention of Nagpur in the KPMG-NASSCOM survey and IDC-Dataquest study testifies to the economic potential of Nagpur. This, when combined with the MIHAN project, has the ability to power Nagpur's economy in the coming years. The higher economic growth and relatively better quality of life enjoyed by Nagpur's citizens will increase the net migration to the city. This will result in a higher population growth rate than what Nagpur has experienced in recent decades. This will further increase the pressure on urban services and possibly the quality of life in Nagpur will deteriorate as it has in every other major city in the country. The challenge before NMC is to transit from being a tier 2 city to a tier 1 city without breeding the ills that plague the tier 1 cities in the country.

Opportunities in the future

The city of Nagpur has several opportunities and the Corporation should build on these opportunities. Here is a description of opportunities, which Nagpur can capitalize. Nagpur, next to Pune, has the largest number of engineering colleges in and around a city in Maharashtra. Unfortunately, the students graduating from these colleges often do not find jobs matching their profiles in Nagpur. This leads to migraton of a talented class of Nagpur's residents. The challenge for Nagpur city is to create jobs in the city, which will retain this talented pool and spur them to contribute to the further growth of the city. The possibility of technology majors like Satyam Computers and aircraft manufacturer Boeing setting up shop augurs well for the city. For greater sustainability, linkages between industry and institutions must be established and nurtured.

In its resolve to become a well-developed city, NMC should not lose focus on the 36% slum population of the city. The challenge before the city is to ensure that basic services including housing be provided in an equitable fashion to all sections of society. NMC's important role in providing primary and secondary education to the economically weaker sections should not be overlooked. A workforce empowered with basic education can capitalize on the growth opportunities created in the city.

2. PROJECT BACKGROUND

As per the 2001 Census, the urban population of India was 285.35 million, which is about 27.8 per cent of the total population of the country. By 2021, the share of urban population is estimated to rise above 40 percent of India's total population. Thus cities and towns are expected to play a vital role in India's socio-economic transformation and change. Apart from their contribution to the country's Gross Domestic Product (GDP) which is currently placed at about 50-55 per cent, and their growing role in global markets, cities in India will be the engines of economic growth, the centre-points of innovation and the hub of many socio-economic activities. But the current state of affairs in most of our urban areas is far from satisfactory on all parameters of urban governance. Unplanned growth, large slum populations, over-stressed and non-reliable civic infrastructure, inadequate financial resources and dissatisfying urban governance will have a significant negative economic consequence if not addressed in a planned manner.

2.1 Need for City Development Plan

Municipal governments and other institutions responsible for service provision are facing acute shortage of capacity and resources, notwithstanding the 74th Constitutional Amendment Act, 1992, on municipalities. Most municipalities are starved of resources on account of their inability to effectively use their revenue raising powers, in particular, those relating to property tax and user charges.

Given the current state of affairs of our cities which is incompatible with the country's socioeconomic objectives and India's growing role in the world economy, the Government of India has launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in FY 2005-06. The Mission will be in place for the next seven years; it aims to create economically productive, efficient, equitable and responsive cities. The Jawaharlal Nehru National Urban Renewal Mission focuses on:

- Improving and augmenting the economic and social infrastructure of cities;
- Ensuring basic services to the urban poor including security of tenure;
- Initiating wide-ranging urban sector reforms whose primary aim is to eliminate legal, institutional and financial constraints that have impeded investment in urban infrastructure and services; and
- Strengthening municipal governments and their functioning in accordance with the provisions of the Constitution (Seventy-fourth) Amendment Act, 1992. It provides for public disclosure of local spending decisions together with the earmarking of budgetary allocations for basic services to the poor.

The JNNURM assumes that in order to make our cities work and meaningfully contribute to India's economic growth and poverty reduction objectives, it is essential to create incentives and support for urban reforms both at the state and the city level. This can be achieved by developing appropriate enabling frameworks, enhancing the creditworthiness of municipal governments and integrating the urban poor with service delivery systems.

The JNNURM is also designed to encourage the involvement of the private sector in service delivery and management and in the implementation of the reform agenda. It accordingly provides for the participation of business, industry, civic groups and communities in local decision-making. It is estimated that the current gap of infrastructure in cities with a million plus population and a few other (about 60 cities) is about Rs. 1,20,000 crores. In order to meet this gap, the Government of India (GoI) proposed to allocate about Rs. 50,000 crores during the next seven years in the form of grant to ULBs. But GoI has framed the JNNURM guidelines in such a way that applicant ULBs will be eligible for grant assistance provided cities undertake certain reforms; the objective is to improve infrastructure as well as ensure the long term sustenance of the ULBs. Thus in order to be eligible for the grant assistance under JNNURM, the Government of India requires eligible cities to:

- formulate a medium-term City Development Plan (CDP) to align with citizens' interest and priorities;
- prepare project proposals in accordance with the CDP; and
- draw up a timeline for implementing the urban sector reforms.

Subject to the fulfilment of the above-stated requirements and their satisfactory appraisal, the Government of India, Ministry of Urban Development/Ministry of Urban Employment and Poverty Alleviation, will sign a Memorandum of Agreement (MoA) with the state government and the ULB, and release funds in accordance with the payment schedule that will form a part of the Memorandum of Agreement (MoA).

As the formulation of a City Development Plan is a mandatory requirement for accessing JNNURM funds, the Indo-US FIRE (D-III) Project, as part of its agenda to address development challenges facing India's cities, has selected Nagpur (besides Pune and Bhubhaneshwar) as one of the pilot cities to formulate the CDP as per the JNNURM process. In this context, the Indo-US FIRE (D-III) has retained the services of CRISIL Infrastructure Advisory to prepare the CDP for Nagpur.

2.2 Objectives of a City Development Plan

The City Development Plan (CDP) is the Municipal Corporation's corporate strategy that presents both a vision of a desired future perspective for the city and the Corporation's organization, and mission statements on how the Corporation, together with other stakeholders, intends to work towards achieving the long-term vision in the next five years.

The CDP thus prepared should translate the mission into actions and actions into outcomes. The objective of involvement of the stakeholders through the consultation process and endorsement by the local body and other implementing agencies who have committed themselves to action is to hold them accountable for their mission statements, actions and expected outcomes.

The CDP clearly defines how a Corporation will **serve its customers** (businesses and citizens). For example, the CDP will talk about how the Corporation intends to guarantee a basic level of urban services to all citizens; make urban planning responsive to emerging needs; and become responsive to the needs of, and improve its services to local businesses. The CDP will also outline how the Corporation plans to **run its business.** The CDP will elaborate how the Corporation intends to manage public finance in a modern and transparent way; execute urban planning and governance in line with an established framework, and

become more responsive -- cost and time efficient - by availing of technology in its governance and service delivery processes. Finally, the CDP will reveal the Corporation's strategy to **manage its resources**, i.e. how it intends to increase revenues and expand its tax base to allow for self-sustaining urban service delivery, improve its creditworthiness, and recruit and retain a skilled workforce.

2.3 The CDP process adopted by Nagpur

The Nagpur CDP has been developed in close consultation with all stakeholders. As a result, they have endorsed it; this is intended to make Nagpur Municipal Corporation and others, who commit themselves to action, accountable for their mission statements, actions and expected outcomes. The CDP was prepared in a three-phase process. The steps taken under each phase have been detailed in this section.

Phase 1 - Defining vision and mission statements

The first phase started in mid-January with a reconnaissance. This involved conducting a rapid city-assessment of Nagpur and identifying the city's strengths, weaknesses and opportunities.

This was followed by a capacity building session for NMC officials. The session, held on 17th January 2006, served to explain the purpose of the CDP and create a sense of ownership of the plan. The officials of other government departments such as telecommunications, transport and power were also involved in this workshop (refer to Annexure A in Volume 2 of this report).

Capacity building sessions were also held for various groups of stakeholders to inform them about the objectives of JNNURM and the process of preparing the CDP. These stakeholders included business groups and trade associations, citizens' clubs and NGOs (refer to Annexure B and C in Volume 2 of this report).

In order to reach out to a larger section of people, several steps have been taken. First, a JNNURM workshop was conducted for representatives of the press and the electronic media (refer to Annexure D). The objective was to publicize the CDP and get people involved in its preparation. Suggestions and comments were solicited from the citizens by way of newspaper articles and interviews, and emails. 'CDP suggestion boxes' were kept in every NMC ward office. Banners and hoardings inviting suggestions and comments were placed at several vantage locations in the city. In an effort to trigger a discussion in every household, school children were encouraged to write short essays covering topics like what they like and dislike about Nagpur and their dream for the city. It was envisaged that answering these simple but thought-provoking questions would precipitate a larger discussion amongst parents and elder stakeholders of the city. To this end, a public meeting was arranged; about 200 teachers attended it. The teachers were asked to collect responses from students in the form of essays and send the best responses and a compilation of the same to the ward offices.

The vision and mission workshop with NMC officials (first workshop) was held on 23rd January 2006 (refer to Annexure A). It focused on highlighting the current status of all the services provided by various NMC departments and the key issues confronting each department. Each department of NMC outlined its vision for the city of Nagpur and a plan of action that it would follow to realize the vision.

As a follow-up to the workshop, CRISIL Infrastructure Advisory on behalf of NMC, consulted several stakeholders individually. Through these interviews, stakeholders got an opportunity to articulate what they see as necessary for the further economic growth of Nagpur and improvement of the quality of life of its people. The stakeholder workshops conducted prior to individual consultations had paved the way for a more productive and meaningful discussion on the state of affairs in Nagpur city (refer to Annexure E in Volume 2 of this report).

Phase I concluded with a workshop (second workshop), where NMC officials and stakeholders together carried out a visioning exercise (refer to Annexure F in Volume 2 of this report). The NMC mission statements and the perceived needs of the stakeholders were compared and discussed to reach an initial consensus on the main focus areas. Participants were divided into eight different groups; each group represented a focus area⁴. The groups deliberated on how NMC and the stakeholders could minimise the city's weaknesses and contribute to its strengths. Vision and mission statements were also suggested by each group for the city as well as for each focus area. Action groups were also identified for each mission statement.

Phase 2 – Identifying priority actions to achieve missions

Phase II started with focus group discussions with stakeholders to identify and define actions needed to achieve a particular mission statement. The discussions were held between the last week of February and the first week of March (refer to Annexure G in Volume 2 of this report). More than 50 stakeholders and NMC officials were a part of these focus group discussions (FGDs). The NMC officials presented their plans and constraints (both financial and institutional) with respect to sector issues. Based on these, the stakeholders were requested to suggest strategies and action plans and identify the key players for implementing the same. Each discussion was concluded with a summary of agreed strategies and an action plan highlighting areas of disagreement, if any. Based on the discussions and experts' comments, a draft action plan was prepared for every focus area under CDP.

Simultaneously, a citizens' survey was conducted through an independent research agency, to assess the performance of Nagpur Municipal Corporation (refer to Annexure H in Volume 2 of this report). The survey also aimed at assessing citizens' demand for various urban services. It covered aspects like citizens' satisfaction levels on various urban services, their perception of slums in the city, their suggestions regarding steps needed to improve service levels, their willingness to pay for them and finally their vision for their city. The survey was conducted between 20th February and 8th March, 2006 by an independent research agency, Hansa Research, appointed by CRISIL Infrastructure Advisory. The questionnaire for the survey was designed by CRISIL Infrastructure Advisory and was finalised after pre-testing it with over 50 samples during the second stakeholder workshop. The details of methodology and findings are given in Annexure I.

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⁴ The eight groups were 'Water supply, sanitation, sewerage and solid waste management', 'Roads, traffic and transportation', 'Land use and housing', 'Urban poor and slum development', 'Urban environment, gardens and conservation of water bodies', 'Local economic development', 'Education, health and social infrastructure' and 'Tourism, culture and heritage'.

A credit strength assessment was also done to determine the creditworthiness of NMC and to identify financial reforms required to sustain various investments proposed by NMC under JNNURM.

Phase II concluded with a stakeholders' workshop (third workshop) on 12th March 2006 (refer to Annexure I and J in Volume 2 of this report). The findings of all the above three activities were presented to NMC officials and stakeholders. The CRISIL Infrastructure Advisory team's experts supported these groups. The experts provided inputs in terms of resources required, practical implications, preliminary funding requirements and institutional capacity requirements for successfully accomplishing priority actions. Based on these, the stakeholders refined and prioritised the strategies and action plans for their respective groups. Individually, they also assigned priorities to investments across various sectors and projects, keeping in mind the findings of demand survey and credit strength assessment.

Phase 3 – Feasibility assessments and investment scheduling

The last phase of the CDP preparation process involved assessment of detailed project costs and determination of funding sources. Types and sources of financing were identified for priority projects and reforms; the sources included internal resources, state and central government, local financial institutions, donors, and public-private partnerships.

After assessing the risks for these priority projects and reforms, risk management measures were identified. Scheduling of priority actions was also done for all the prioritized projects/actions in a logical sequence based on the availability of resources along with a Capital Investment Plan for the identified projects. The corresponding Financial Operating Plan was also prepared, outlining the preliminary budget, financing assumptions and responsibilities for implementation and financing.

All these were integrated into a draft City Development Plan and presented in the fourth and last workshop with NMC officials and stakeholders on 8th May 2006 (refer to Annexure K in Volume 2 of this report). The implementation issues relating to the City Investment Plan were discussed at the workshop. Based on the discussions in the workshop, this final CDP document was prepared.

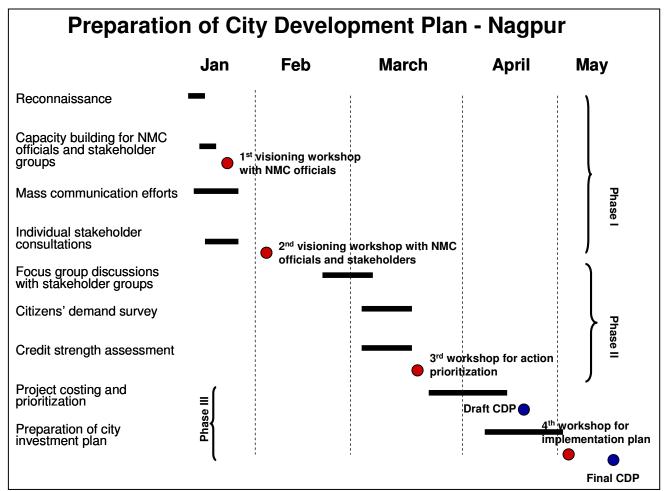


Figure 1. Process of preparation of CDP for Nagpur – phasing and timelines

3. ABOUT NAGPUR

Nagpur has always enjoyed the status of a capital city that continues till date; it is the winter capital of the Maharashtra state. It completed 300 years of establishment in 2002. Though an important administration centre with advantageous geographical location, Nagpur's economic development has been constrained by the limited development of the hinterland of central India. However, with technological developments and overall development of the central hinterland, the scenario is set to change. Investments in central India (Vidarbha region) as well as the formation of the Chattisgrah state should provide an impetus to Nagpur's local economy.

3.1 History of Nagpur

The city got its name from the River Nag or Nag people and is known since prehistoric times. Nagpur and its surrounding region also find a mention in the Vedic and Mauryan scriptures.

Nagpur city's foundation was laid by the Gond King of Deogad "Bakht Buland Shah" in the year 1703. Chand Sultan, successor to Bakht Buland Shah, constructed a three-mile long wall around his City by the Nag River. In 1743, it became the capital of Raghoji Rao Bhonsle's kingdom. The Bhonsle period witnessed peace with cultural and economic prosperity. Cottage and handloom industry started developing during this period. The city was annexed in 1817 by the British after the defeat of Appasaheb Bhosale in the Battle of Sitabuldi. Consciousness for planned city development was raised by Sir Patrick Geddes, who visited the city in 1915. The Nagpur Improvement Trust (N.I.T.) was established in 1936 to carry out planned development in the city. The British Government made Nagpur the capital of the new state named Central Province in mid-19th century and it remained so till 1956, after which it became the second capital of Maharashtra.

Thus Nagpur has enjoyed the status of being the administrative centre of Central India during the ancient and medieval eras. It carries a legacy of cultural and economic prosperity. Its proximity to tribal areas has also ensured the preservation of its natural resources, i.e., minerals and forests. In the modern era, though Nagpur has lost its politically prime position, natural aspects of geography, climate and location continue to position it favourably for prospering as an economic hub.

3.2 Geography and climate

The town is dominated by the British fort, which was built in 1818 on the twin hills of Sitabuldi in the centre of the city. The surrounding region is an undulating plateau rising northward to the Satpura Range, from 889 to 2,142 feet (271 to 653 m). In the west, the hills are forested. In the northeast are the hills of Ramtek. The region is drained by the Kanhan and Pench Rivers in the center, the Wardha in the west, and the Wainganga in the east. Both these rivers later merge as tributaries into the Godavari River. The soil in the west and the north is fertile black (cotton) and that in the east alluvial in nature.

The climate of Nagpur follows a typical seasonal monsoon weather pattern. The peak temperatures are usually reached in May/June and can be as high as 48°C. The onset of monsoon is usually from July. The season extends up to September with the monsoons

peaking during July and August. After monsoons, the average temperature varies between 27°C and approx 6-7°C right through December and January. The average annual rainfall is 45 inches, with more rain in the east than in the west.

3.3 Location and connectivity

Nagpur is located at practically the geographical center of India; in fact, the Zero Milestone of India (a heritage monument) is in this city. (Nagpur is 837 km from Mumbai, 1094 km south of Delhi, 1092 km north of Chennai and 1140 km west of Kolkata). All major highways -- NH-7 (Varanasi - Kanyakumari) and NH-6 (Mumbai - Sambalpur - Kolkata) and major railway trunk routes (Mumbai, Chennai, Howrah and Delhi) pass through the city.

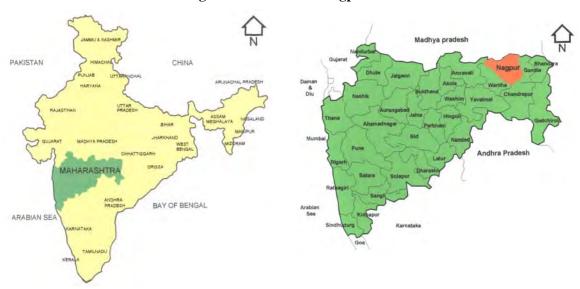


Figure 2. Location of Nagpur in India

An electrified broad gauge railway track connects Nagpur to the four major metros. Destinations connected include Mumbai, Delhi, Calcutta, Chennai, Kolhapur, Pune, Ahmedabad, Hyderabad, Jammu, Amritsar, Lucknow, Varanasi, Bhubaneshwar, Thiruvananthapuram, Cochin, Gorakhpur, Visakhapatnam, Bangalore, Mangalore, Patna and Indore.

The Sonegaon airport is 7.5 kilometres south of Nagpur city. It is connected to some important Indian and international cities including Mumbai, Calcutta, Delhi, Hyderabad, Raipur, Singapore, Saudi Arabia and Bangkok.

Thus, distance and connectivity with all the important Indian cities gives Nagpur an inherent advantage. It can be seen as a transport hub, connecting the Indian cities to each other and international destinations as well. Various IT and ITES companies are also viewing this characteristic as a strong positive factor. The city provides access to its own skilled manpower and also to that of the entire region.

3.4 Demographic profile

The Nagpur district consists of Nagpur Municipal Corporation, 10 municipalities, 13 panchayat samitis and 778 gram panchayats. The total area covered is about 9897 sq. km. of

which Nagpur city accounts for 217.65 sq. km. (2.2%). The district population (as per Census of India - 2001) was 40.51 lakhs of which 20.52 lakhs (about 50%) were in Nagpur city. The average population density of Nagpur is quite low as compared to other comparable cities of India. The figure was 95 persons per ha in 2001⁵.

It is estimated that 36% of the population in the city of Nagpur lives in slums. There are about 427 slum pockets in the city spread over an area of about 17 sq. km. Of the 427 slums, 292 slums are notified slums. In 1997, the slum population of Nagpur was about 6.61 lakhs, which increased to 7.4 lakhs in 2001 and 8.08 lakhs in 2005, thus showing a growth of 22% in the last eight years. Of the 8.08 lakh population, about 20% lives in non-notified slums (Source: Slum department, NMC).

3.4.1 Growth and spatial distribution

As per Census of India (2001), Nagpur's population is about 20.52 lakhs. The population trends of the city show a declining growth rate over the decades. It has decreased from 48.3% in 1921-31 to 32.6% in 1991-2001. Based on the linear projection method, the growth rate may reduce in the next three decades to 22.2% (2021-31). Accordingly, in the next 25 years Nagpur's population would double. But, considering the recent development projects like Multimodal International Hub Airport – Nagpur (MIHAN) and IT sector's likely investments in the city, Nagpur's growth rate may revive itself and Nagpur's population may double by 2021, i.e. in the next 15 years. Nagpur needs to plan for its infrastructure accordingly. In the graph below the corrected figure population reflects that the level of population that can be attained if the all the proposed investments in and around the city like the MIHAN project fully materialise.

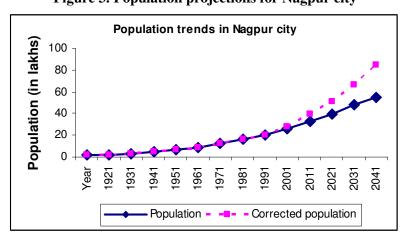


Figure 3. Population projections for Nagpur city

As per Census of India 2001, the attractiveness of the city for migrants has been decreasing. In the last decade (1991-2001), almost 46% of the population growth has been due to inmigration. The figure has declined to 24% in the last four years (1997-2001), as per Census 2001. Further, data regarding key reasons for migration shows that attractiveness of the city as a business destination is also low. Most of the migrants have originated from the rural areas. The key reasons for migration by the male population were work/employment (49%),

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⁵ The comparative figures for Surat, Ahmedabad, Indore are 217, 184 and 122 persons per ha respectively. Pune has a marginally higher density of 104 persons per ha.

followed by movement of household (22%) and education (10%). The proportion of people shifting for business purposes was very small.

The distribution of population is highly uneven. The city is characterised by low-rise development, which is dense in the older and inner parts of the city, and by a lot of vacant land in the outer areas of the city. The inner city area of the city had high densities of 700-850 persons per ha (as per Census 1991) and also along national highways, NH-6 and NH-7. But the peripheral areas indicated densities ranging from as low as 10 persons per ha to 150 persons per ha.

3.4.2 Other characteristics

India has a very young population with a median age of 24 years. About 65% of the total population is less than 35 years old. Nagpur is also reflective of this demographic characteristic with the median age being closer to the national level; 66 percent of the total population is under the age of 35 years. The 10-25 year age group forms the largest proportion of the total population. This offers a valuable resource for economic development of the city. But, at the same time, if not given optimum opportunities, the tendency to migrate will probably be the highest within this age bracket.

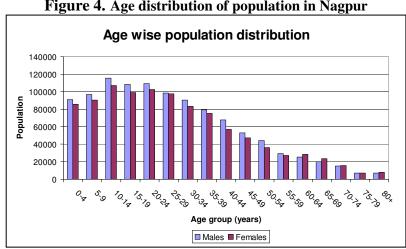


Figure 4. Age distribution of population in Nagpur

Source: Census of India, 2001

The sex ratio in Nagpur is quite healthy at 936, which nearly equals the all-India figure of 933. The figure is even healthier for the slum population of Nagpur at 948. The figures are significantly better than those obtaining in many other Indian cities like Bangalore and Ahmedabad (Figure 5).

Sex ratio of some Indian cities Nagpur (slums) Nagpur Chandigarh Lucknow Ahmedabad Bangalore 550 600 650 750 950 1.000 800 850 Sex Ratio

Figure 5. Sex ratio in Nagpur

Source: Census of India, 2001

About 84% of Nagpur's population is literate as per Census 2001. But the figure is aligned in terms of gender. Males have a literacy rate of 90% and females a mere 78%. Of the total slum population, about 75% are literate; 79% of the males and 68% of the females. The figures are clearly skewed towards the male population. NMC has kept these factors in mind while planning for primary educational infrastructure and implementing literacy campaigns.

3.5 Economic base of Nagpur

About 30 percent of the city's population is 'working' as per Census of India-2001. About 85 percent of the working population is male. Trade, hotels and restaurants is the largest industry group in the city. About 36.3 percent of the working population is engaged in this industry group. Transportation sector employs 17.6 percent of the total working population. Nagpur's location on the confluence of various transportation routes has probably contributed to the large share of employment generation in the trade and transportation sector. Manufacturing also has a significant presence in Nagpur with 15.4 percent of the working population involved in this sector.

Table 1. Workforce participation in Nagpur

	Persons	Males	Females
Main workers	568283	478981	89302
Agriculture	0.6%		
Mining	0.8%		
Manufacturing	15.4%		
Water and electricity			
works	0.3%		
Construction	10.6%		
Trade, hotels and			
restaurants	36.3%		
Transport	17.6%		
Other services	18.4%		
Marginal workers	59198	40123	19075
Non-workers	1424585	540661	883924
Total	2052066	1059765	992301

Source: NSS 55th round, Census of India, 2001

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⁶ The corresponding figures for Pune are 77% overall, 81% for males and 72% for females.

3.5.1 City with latent economic potential

Nagpur measures well on various liveability indices in comparison with other cities. It has the lowest income inequality among various cities in the country. 'India Today – R K Swamy BBDO Guide to Urban Markets', also ranked the city as the tenth wealthiest, highest-consuming and most aware Indian city in 2004. Nagpur's vantage location coupled with growth triggers like the construction of the east-west and north-south corridors, proposed investments in the multimodal transport hub, development of the special economic zone, and revival of industries in the Vidarbha region would stimulate economic growth.

In addition, Nagpur has all the ingredients for emerging as a high quality service centre. IT being a knowledge-based industry, quality human resources are one of its key requirements. The region around Nagpur has 27 engineering colleges with about 8,600 engineering students passing out of these colleges every year. (After the Pune region, Nagpur has the highest number of engineering colleges in the state of Maharashtra.) This would render Nagpur an attractive location for the IT-ITES industry. Low labour cost and the availability of highly skilled manpower would add to Nagpur's attractiveness. Information Technology Enabled Services (ITES) and Business Process Outsourcing (BPO) units would also consider Nagpur as a business destination, as they prefer locations with low cost of living. The figure for Nagpur is substantially lower as compared to most other IT destinations in the country. A Dataquest-IDC study of the top ten IT cites in India ranked Nagpur seventh, based on parameters such as manpower availability, information, communication and technology (ICT) infrastructure availability and usage, lifestyle and environment. Also, as per the KPMG – NASSCOM survey, Nagpur is one of the top four tier II cities that have a huge potential for information technology and IT enabled services.

Nagpur holds a strategic position in international aviation routes. Its unique location at the crossing of the air route between Europe and South-East Asia as well as between South Africa and North-East Asia makes it a logical and ideal location for a passenger and cargo hub. Within India also, the fact that the trunk north-south and east-west highways and railways also cross at Nagpur makes it a natural choice as a transport hub based on multimodal transport principles.

3.5.2 Investments triggering economic growth

Nagpur has adequate reasons to grow at a faster pace than the past. The slowing down in the decadal population growth can be taken as a proxy for decreasing levels of economic activity in the region. It has been on several occasions stated by various stakeholders that, unlike Pune, Nagpur has not been able to retain the huge graduating pool of engineers and doctors. This has mainly been attributed to the lack of adequate employment opportunities in the city.

What has probably held back economic growth in the past is the lack of priority given to Nagpur (and Vidarbha in general) by successive state governments. It has been well-documented by the Dandekar Committee (1984) that at 1982-83 prices, the total developmental backlog in Maharashtra state excluding Mumbai was Rs.3177 crores. Out of which, Vidarbha's share was Rs.1247 crores, about 40% of the state backlog (excluding Mumbai). The developmental backlog for Marathwada and Western Maharashtra was

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⁷ Techno-Economic Feasibility Study of the proposed Multi-modal International Passenger and Cargo Hub Airport at Nagpur by L&T-Ramboll, and CRISIL Infrastructure Advisory

relatively lower at Rs.751 crores and Rs.884 crores. The backlog over the years has increased further while that for the rest of Maharashtra has declined. As of April 2000, the developmental backlog has increased to Rs.9830 crores.

MIHAN (Multi-modal International Hub Airport of Nagpur)

The trigger that Nagpur is mainly looking at is the MIHAN project. The proposed MIHAN project is expected to spread over 4,025 hectares at a cost of Rs.2000 crores. Besides the airport, the proposed project involves a road-rail terminal, a special economic zone (SEZ) and other urban amenities to meet the needs of the working population in around the proposed airport. The SEZ will provide the right platform for exploiting the latent economic potential of Nagpur city. The SEZ project has potential to create over 1.2 lakhs jobs in Nagpur city.

Table 2. MIHAN Project

Activity	Area in hectares
Airport	1200
Road – Rail Terminal	200
SEZ	1475
-Captive Power	52
-IT Parks	400
-Health City	50
-Other Manufacturing & Value Added Units	963
Residential, Open Spaces, Hotels, Roads, Water	
Supply	1140
Total	4025

Source: Maharashtra Airport Development Corporation

The idea of the MIHAN and SEZ project together is based detailed market studies. It has been observed that each of the industries that will be contained in the SEZ has been chosen on the basis of the human and natural resource advantages that Nagpur city has to offer to prospective investors. The same is true for the transport hub project. About 18 percent of the working population is involved in transportation and allied businesses. This figure for cities like Bangalore, Surat, Indore, Ahmedabad and Chandigarh is in single digits. This implies that the share of the working population involved in transportation and allied industries is higher than what is prevailing in other cities. This can be attributed to the unique geographical positioning of Nagpur city. This industry is mainly driven by the unorganized sector. The effort of MIHAN is to capture the inherent advantages in an organized and scientific manner. The availability of both human and natural resources goes a long way to ensure that the MIHAN project is rooted in reality.

The details of the MIHAN and the SEZ project are listed below.

IT Parks

Easy availability of constructed premises, tailor-made to suit the needs of the ITES-BPO industry, replete with plug and play facilities at low cost, serves as a major attraction for the ITES-BPO industry. Satyam Computers already has bought 100 acres of land in the SEZ

area. Construction majors Shapoorji Pallonji and L&T Infocity have already initiated plans to develop IT parks over an area of 150 acres in the SEZ area.

Airport

The airport is projected to handle about 14 million passengers a year (70% international) and 870,000 tonnes of cargo (90% international) in 30 years time. It is expected that by 2015, 62,000 aircraft movements per year would take place at the Nagpur airport. Boeing has identified the MIHAN SEZ as a potential site for a \$100 million investment in creating a maintenance, repair and overhaul facility (MRO). The airport will be backed by several value-adding economic activities, which will be covered by a SEZ spread over 1475 hectares.

Road - Rail Terminal

Nagpur lies on the north-south, east-west corridor of the National Highway Development Programme. Goods traffic passing through Nagpur is expected to increase significantly. Air cargo shipped in and out of Nagpur will require multimodal terminal connectivity. Thus, a road and rail terminal will be crucially needed in the MIHAN area. If Nagpur were to act as a major distribution hub for the entire country, the multimodal terminal will also require warehousing facilities including cold storage.

Health City

Nagpur city's health care facilities presently cater to the needs of the three-crore strong population of Vidarbha and adjoining districts of MP and Chattisgarh. Since there is no other city in a 300 km radius with good medical facilities, the city offers an excellent opportunity for health care establishments/corporate hospitals. The healthcare industry already has a substantial presence in the city; the numerous medical colleges would ensure an easy supply of trained manpower to the industry. The presence of an international airport in the vicinity can ensure easy access to the facilities to patients from all over the world. Nagpur can potentially attract medical tourists if not from all over the world but certainly from countries in the South Asia and the Middle East.

Status of the MIHAN Project

The Government of Maharashtra is actively considering this project and has already released Rs.80 crores towards land acquisition. Already, 1450 hectares of the 1475 hectares required for the SEZ have been acquired. The contract for the road-rail terminal has been awarded to a consortium led by logistics major SICAL. Boeing has already committed investments of \$100 million in developing a MRO and pilot training facility.

3.5.3 Power generation and distribution

One of the problems that emerged through the stakeholder consultations was that Nagpur does not get adequate power supply due to large scale industrial activity. This problem faced by existing and prospective entrepreneurs would be resolved to a considerable extent in the coming years. Several power projects have been planned, given the geographical advantages that Nagpur has to offer.

The Nagpur region has large deposits of coal. The Western India Coalfields has its head-office in Nagpur and has large mining operations in a 150 km radius of the present Nagpur airport. As a result, coal washing is also a major industry around Nagpur. Due to large deposits of coal in the region, it offers an attractive location for coal-based power generation. It is estimated that coal deposits are sufficient to generate 4500 MW of power annually. The planned power generation capacity of Koradi and Khaparkheda will add another 1500 MW of

power. The SEZ area in the MIHAN region will also have its captive power generating plant of 100 MW for assured power supply. Nagpur will also witness an investment of Rs180 crores for revamping and modernising the distribution system under the Accelerated Power Development and Reform Programme. This will improve the quality and reliability of power distributed.

4. CITY ASSESSMENT: ANALYSIS OF THE EXISTING SITUATION IN NAGPUR

To formulate the City Development Plan, an assessment of Nagpur city has been carried out with respect to basic infrastructure (both physical and social), physical and environmental aspects like land usage and pollution levels and finally the financial status of the municipal corporation. This chapter also discusses the status of infrastructure in the slums and the status of various slum development projects undertaken in the city. The demographic and economic aspects have already been discussed in the previous chapter. The objective is to make a realistic assessment of where the city is, the direction in which it has been moving, and its strengths and weaknesses.

4.1 Basic infrastructure

Municipal services have a direct and immediate effect on the quality of life of the people in the city. Poor municipal services can also limit city's attractiveness for business or industry and thus limit job opportunities for its residents. Therefore, the biggest challenge for the municipal corporation is to provide its citizens with reliable services that are financially and environmentally sustainable. This section details the quality of urban services offered by NMC (and other public bodies) to its citizens and their demands and perceptions regarding these services. The areas covered in this section include water supply, sewerage and sanitation, storm water drainage, solid waste management, street lighting, roads and public transport.

4.1.1 Water supply system

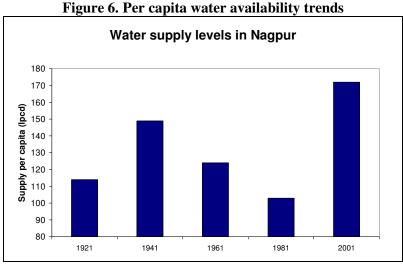
Providing adequate supply of water to the city is an obligatory function for Nagpur Municipal Corporation. The process involves obtaining raw water from available sources, filtering, treating and distributing it to the consumers. Apart from these physical processes, NMC also has to manage other aspects of the supply system such as attending to complaints, charging customers for services and making investments to ensure sustained supplies.

NMC sources about 480 million litres per day (MLD) of water. Of this, only 10 MLD is sourced from ground water resources; thus the dependence on ground water is quite low. Overall, the water supply situation meets current demand. According to NMC sources, if no steps are taken, Nagpur would have to face a deficit water situation of 62 MLD in 2011. NMC, in anticipation of the increase in demand, has initiated steps to increase the supply of water. The Pench IV Water Supply Project will enhance the water supply capacity by 113 MLD. The planned capacity upto 2031 will be just adequate to meet the projected demand. Steps are already in place to recharge ground water sources through rainwater harvesting and rejuvenation of lakes in and around the city. These additional resources may be utilised to supplement surface water sources in the long-run. But there are no concrete plans in place to augment ground water sources for supplying drinking water to the city by NMC.

The current per capita availability of water in Nagpur is quite high at 200 lpcd (2004). Though there has been some fluctuation in the past few decades; the figure was 172 lpcd in 2001. This is mainly due to the continuous addition of water sources to the city's water supply system. Nagpur manages to meet the UDPFI (Urban Development Plans Formulation and

Implementation) guidelines, according to which 135 lpcd is an absolute minimum figure, while 150-200 lpcd is the desirable level. As per the citizens' survey, almost 63% of the people receive adequate quantity of water most of the time, while 31% feel that the quantity is adequate sometimes, only 4% feel that they never get sufficient quantity of water. The variation in response is minimal across socio-economic classes.

The citizens' survey also reveals that, on average, water is supplied for only four hours in a day, while citizens would like at least 5-6 hours of supply. In terms of water pressure, it was found to be satisfactory most of the time for 54% of the population; 7% feel that they never get water supply at adequate pressure levels. The variation is quite high across municipal zones.



Source: NMC officials

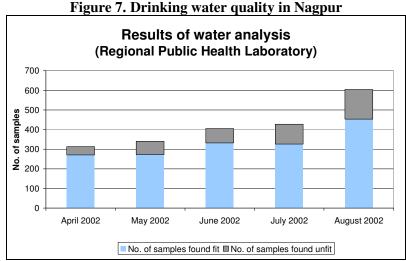
At present, there are about 1.97 lakh domestic water connections in Nagpur, which serve about 85% of Nagpur's population (the rest is served through public stand posts). Assuming an average household size of five, this implies approximately one water connection for every two households. Of these, about 1.75 lakhs are metered connections. But, in the present system, the onus of installing the meter lies on the consumer. There is no mechanism in place to ensure the reliability of these meters. The non-revenue water level is very high. Against a treated water supply of 470 MLD, NMC is only able to bill 241 MLD of water. NMC has plans for introducing 100% metering of the water connections in the city. It is also drawing up plans to introduce quality checks for the same.

The treatment losses in the system are quite high. The water system input volume is 625 MLD while the treated water supply volume is only 470 MLD. So 22% of the water is lost by way of treatment losses.

Further, the city ranks poorly in terms of transmission and distribution losses. The losses should ideally be within 15-20%; currently, these are slightly higher than 60%. For every 200 lpcd of water supplied to the consumer, about 97 lpcd is lost in the transmission and distribution process. The water audit study reveals that the transmission losses of raw water through the bulk supply canal range from a minimum of 20% to a maximum of 35% depending on the quantum of water released in the canal. In absolute terms, the quantum of water loss was estimated to be a minimum of 100 MLD and maximum of 250 MLD. If NMC can recover these losses, the additional water available from the recovery of these losses will

be sufficient up to 2016 for the expected population growth of the city, thus freeing scarce financial resources for undertaking other projects in the city.

To ensure the quality of water supplied, samples are collected routinely for water quality monitoring. In a study carried out in 2002, it was observed that about 15-20% of the samples were unfit for consumption (Figure 7). The water was found to be bacteriologically unsafe in a number of cases.



Source: Environmental status report, 2002-03, NMC

It is also observed that the low level of water stored in the overhead service reservoirs results in low pressure and inadequate supply in various localities. Therefore citizens have taken recourse to digging wells for themselves or using water available from hand pumps. The quality of water from such sources is unsatisfactory in general. The analysis of water drawn from these sources, in the slums, reveals that the hardness level of water exceeds the prescribed limits; in a few cases, nitrates also had a very high presence. The pH of water in some of the slums was alkaline indicating that it contained stabilized organic matter. The results of the analysis indicated presence of iron and fluorides in certain cases, possibly due to old pipelines or due to the entry of ground water from the leaking joints. The Municipal Corporation does not keep account of any of these private sources. Thus, it is imperative that these are also accounted for. NMC feels that proper action needs to be taken to improve the total quality of water supplied to the city through early completion of the proposed water projects and regulation of /restriction on the usage of private sources of water.

The Corporation follows a flat tariff structure; hence consumption is not linked to the water charges. The annual expenditure on water supply is approximately Rs.95 crores against an actual receipt of only Rs.50 crores. NMC needs to make plans for improving cost recovery levels. NMC is planning to introduce a volumetric tariff. For this, the reliability of meters needs to be ensured by NMC through a systematic process. The citizens' survey also suggests a positive attitude among citizens towards metering. On being asked about their willingness to pay for better water supply services, almost all the respondents expressed their willing to pay at least 10-20% more than their current payouts; the higher socio-economic segments are willing to pay as high as 25% more. NMC feels that it should revise its tariffs accordingly.

4.1.2 Sewerage system

The drainage function of an urban local body is related to the disposal of wastewater and storm water. This is carried out either through underground piped drains (sewers) or surface drains, which may be covered or open. Ideally, storm water drainage should be separate from the wastewater drainage system. But most of the cities in India do not have an adequate drainage system to carry the wastewater. So, often the sewage flows through surface drains, which are supposed to carry storm water. In the case of Nagpur, only 60% of the city has underground sewers. In the case of the rest of the city, the sewage flows in open drains, which often get choked causing unhygienic conditions. As per the citizens' survey, about 35% of respondents feel that drains get choked often, of which, about 42% feel that it gets choked at least once every week. The percentage of respondents feeling that NMC never cleans the drains is as high as 39%.

In 1943, Nagpur Improvement Trust (NIT) prepared sewerage scheme for the old Nagpur city area; it was installed in the year 1964. Thereafter NMC made additions and alterations to the sewerage system. Slopes in the city are from west to east in general. The sewerage system consists mainly of gravity sewers, which are designed to take the maximum advantage of the natural slopes. There is only one pumping station and treatment plant at Bhandewadi. Based on topography, Nagpur city is divided into three sewerage zones namely North Sewerage Zone (NSZ), Central Sewerage Zone (CSZ) and South Sewerage Zone (SSZ).

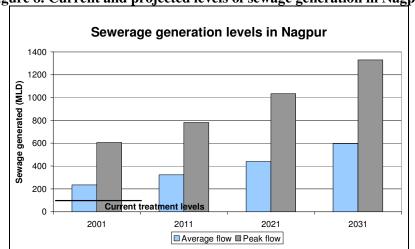


Figure 8. Current and projected levels of sewage generation in Nagpur

Source: Detailed Project Report for proposed sewerage system (NZ), September, 2003

Currently, about 235 MLD of sewage is generated in the city on average (as per NMC's estimate). It increases to 600 MLD in the peak season (Figure 8). Of the total sewage generated, only 40% flows through the sewers. The rest flows through the city's open drains. The situation is worse in the monsoon season. Of 235 MLD of sewage generated across the city, only a part of the flow, about 100 MLD is collected and treated. This is mainly from the CSZ. Sewage from the northern and southern zones and the remaining sewage from the central zone flow into the nallahs without any treatment. This leads to extremely high levels of pollution in the water bodies of Nagpur.

Of the three zones, the situation is worst in the north zone. The collected sewage is presently disposed directly in the Nag River, constructed drains and Pili River without any treatment. There are about 26000 manholes in the zone of which about 50% are choked. The system is heavily silted and needs cleaning. The density of population is quite high in this zone. 50% of

the area does not have any sewerage system. There is also a severe lack of toilets. As a result, a large part of the population resorts to open defecation. This leads to unhygienic conditions in the area and pollution of ground water.

4.1.3 Storm water drainage

The existing storm water drainage system is inadequate. With houses, roads, footpaths, etc. coming up, the permeable area decreases and rain water cannot properly percolate. Thus storm water drainage becomes imperative to avoid water logging and resultant wear and tear of roads. The necessity for and design of storm water drainage depends on climatic conditions, i.e., incidence of rainfall and natural drainage, watershed and topography.

Nagpur city has a very good natural drainage pattern. The city has a suitable topography with a natural gradient in one direction i.e. from west to east. There are two major storm water carrying streams. The Nag River starts from the Ambazari Lake's overflow weir at the western end of the city and runs through the middle of the city towards the east. It caters to the storm water drainage requirement of part of west Nagpur, south Nagpur, central Nagpur and east Nagpur. The second river or the Pili River starts from the waste weir of Gorewada at the northwest end of the city and runs through the north to the eastern end of the city. It caters to the storm water drainage requirement of part of west Nagpur and north Nagpur. Besides these, there are some important connecting nallahs also running along and across the city, connected to the Nag and Pili Rivers.

At present, only 30-35 % of the road network is covered by the storm water drainage system of open drains and closed drains. Almost all storm water drains are flooded due to carrying both storm water and sewer flow. In the monsoon (peak period), there are problems of back flow in the sewers that lead to unhygienic conditions and outbreak of epidemic. There is a need to rejuvenate the natural drainage pattern by de-silting the natural drains, rivers and nallahs and removing the blockages in the natural drainage paths. To support the natural system, the storm water drainage network along the roads also needs to be strengthened in terms of coverage and capacity.

4.1.4 Solid waste management

People often form their impressions about a city from the general level of cleanliness that they see around the city, especially the presence or absence of garbage on the streets and open places. Thus the quality of operations of a city's solid waste management system is crucial for the overall impression of the urban local body. Collection and disposal of waste is an obligatory function of the Nagpur Municipal Corporation.

Nagpur generates about 875 MT of waste per day; 350-400 grams per capita per day. About 30% of this waste is organic compostible material. The remaining 70% consists of paper (11.9%), rubber, leather and synthetics (3.02%), glass (0.98%), metals (0.33%) and other inert materials (53%).

About 75% of the waste is collected under the door-to-door waste collection scheme called "Swatchata Doot Aplya Dari " (Sanitation worker at your doorstep) by Swatchata Doot through ghanta gadis and cycle rickshaws. This is an NGO-based initiative, wherein a

contracted NGO worker called Swatchata Doot visits every house, shop and other commercial establishment. About 60% of the residential and commercial establishments have been covered by this scheme. Waste from hotels, restaurants, mess, etc. is collected separately and is converted into compost by vermi-composting. Waste consisting of paper, plastic, metal, brick stone and glass are sent for recycling by rag pickers. Through this initiative, NMC is saving about Rs. 500 lakhs annually, as compared to where NMC would have taken up the responsibility of waste collection and segregation itself.

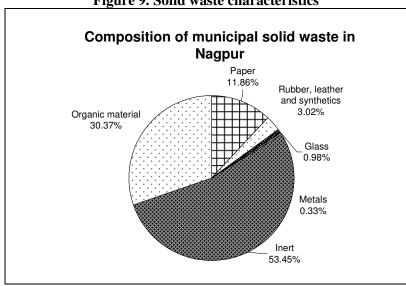


Figure 9. Solid waste characteristics

Source: Environmental status report, 2002-03, NMC

Contracts for the cleaning of busy roads, market places, commercial areas and other important roads have been given to private agencies/NGOs. The agencies have to work in these areas for a minimum of 14 hours daily in two shifts for all seven days. The workers have to wear uniforms and carry identification cards. The minimum number of workers to be deployed per kilometer has been fixed. About 300 km. of roads and three vegetable markets are being cleaned by 700 workers. The manpower deployment matches the norms prescribed by the Solid Waste Management and Handling Rules, Supreme Court of India, 2000.

As per the citizens' survey, the majority of the respondents have said that the Corporation collects garbage from the doorstep mostly on a daily basis and they are more than satisfied with its services. So far, though the door-to-door collection system has been successful, the practice of segregation at source has not been introduced successfully. NMC, with the help of NGOs, has started holding public awareness meetings to encourage segregation of waste.

For storage of waste, about four-six community bins are placed in each ward. A ward typically has an area of 4-12 sq. km and a population of 45-50,000. Accordingly, the solid waste generated is about 16-20 MT per day; this is collected and stored in these bins. The city has approximately 300 such bins. Besides these, an additional 90 bins are kept in the market and other areas. The bin placement practices adequately match the norms prescribed by the SWM Handling Rules, Supreme Court of India, 2000.

Waste collected from all over the city is transported to the processing and disposal sites by 450 labourers and 104 drivers. The fleet of vehicles available for the purpose includes dumper placers, trucks, tractors, market vans and heavy machines, totaling 162 vehicles. 41

labourers are involved in processing and disposing waste at disposal sites. The frequency of transportation of waste from various waste storage depots is once or twice a day and the total capacity of the fleet is 960 MT. Vehicles used for transportation of waste are covered on top. Waste is not exposed to the open environment. All the containers are of a closed type. Wherever open trucks are used, they are covered during transportation. There is limited waste handling while the waste is being transported and unloaded by the dumper placers.

Currently, NMC is not following a scientific method of waste disposal. The city development plan has earmarked two sites for waste disposal, Bhandewadi and Chikhlikhurd. The site at Bhandewadi is being used for dumping at present. Decentralized waste management is being practiced in a limited way. Waste generated from hotels, restaurants, mangal karyalaya (marriage halls), vegetable markets, etc. is collected separately. This waste is collected daily, and one-third of this (8-10 tonnes) is converted into vermi-compost. This is then used as manure in the NMC gardens. Composting of other bio-degradable waste has also been started in some NMC gardens and dahan ghats (cremation grounds). Development of a sanitary land fill at the existing dumping site is in progress. A composting plant with the latest technology is also being planned to be developed within the dumping site.

Treatment and disposal of bio-medical waste has been assigned to a private contractor on Build Own Operate (BOO) basis. Dental clinics, dispensaries, blood banks, pathology laboratories, homeopathic colleges, etc. have been covered. Under this scheme, NMC receives Rs. 23.5 lakhs as an annual royalty fee. Land measuring about 0.25 acres has been allocated to the contractor at Bhandewadi on a 30-year-lease.

The key issues with the solid waste management services of NMC can be thus summarized as follows. Segregation at source is very limited. Mostly un-segregated municipal solid waste (MSW) is disposed. People are reluctant to pay user charges and also there is a lack of strong political will to promote segregation. The available manpower is inadequate to clear all the containers /bins daily. The number of transfer stations or collection or storage centers is also inadequate. While unloading into containers, there is handling of waste, which poses a threat for the persons handling the waste. The system needs to be modernized further. Due to a single and distant disposal site and lack of adequate transportation infrastructure, every vehicle has to travel a long distance and spend a lot of time per trip. Finally, there is only one existing disposal site at Bhandewadi, which would not meet future requirements. Presently, all the MSW is simply dumped at the disposal site. Non-availability of proper disposal and unloading facilities is a major concern, especially during monsoons.

4.1.5 Roads and public transport

Nagpur being almost at the geographical centre of India, all major highways and railways pass via Nagpur. Nagpur city is at the junction of two National Highways, NH-6 and NH-7. This has resulted in the city being a major trade and transportation centre. It is connected to all metropolitan cities of India by air routes as well. The total length of roads in the city is 1907 km (Table 3), of which the length of major roads is 500 km, the remaining being the internal roads. The Nagpur Municipal Corporation (NMC) has executed an Integrated Road Development Project (IRDP) to improve the transportation system within the city limits.

Table 3. Details of road network in Nagpur

Total length of city roads in NMC area	1150 km
Total length of roads	1907 km
Cement roads	25 km
Paved tar roads	1502 km
Unpaved roads	380 km
The average width of carriageway in the year 2000	6-14m
Length of ring road around the city	41.48 km
No. of flyovers	3
No. of river bridges	-
No. of railway-over-bridges	3
No. of intersections	200
No. of road crossings with signals	112
No. of road crossings with timer	54
No. of road crossings with blinkers	30
No. of pay and parking zones	11

Source: Environmental Status Report, 2002-03, NMC

The Integrated Road Development Project brought about a revolutionary change in the city. Committed totally to this highly ambitious project, NMC and NIT have together given Nagpur city an infrastructure in tune with the metros and in a record time. Initiated after intensive survey and planning, the widening and construction of all major roads, streets, junctions and highways of the city have been taken up. The roads have been reconstructed and beautified with assistance from the State Govt.-owned Corporation, the Maharashtra State Road Development Corporation (MSRDC). The successful implementation of IRDP in Nagpur city was initiated against a highly cynical backdrop with virtually non-existent financial and technical support. It has set an example for every civic/corporate body/individual/institute in the country to galvanize development and reforms in their cities and thrive on challenges.

Parking facilities

Parking facilities in Nagpur are inadequate. It is evident from the fact that the city roads are clogged with parked vehicles. This results in congestion on the roads and leaves little room for pedestrians. It has become extremely important to develop and enforce strict parking norms in new buildings and make suitable parking arrangements in public spaces. The 'Pay and Park' system was thus developed and is under implementation in conjunction with IRDP.

Vehicle density and road safety

There are about 4.6 lakhs vehicles registered in Nagpur including two-wheelers, three-wheelers and four-wheelers. About 280 vehicles are being added to this number everyday.

Table 4. Vehicle mix in the city

Vehicle Category	No. of vehicles	%
Two-wheelers	384,383	83.7
Three-wheelers	20,000	4.4
Cars	26,069	5.7
Jeeps	8,585	1.9
Omni Buses	497	0.1
Tractors	3,475	0.8
Trailers	3,716	0.8
Others	12,275	2.7
Total	459,000	100

Source: NMC and Indiastat

It has been a general experience that with improvement in road quality, there is considerable growth in vehicle ownership. Nagpur has not experienced such a phenomenon so far. For instance, Pune with a population of just over 25 lakhs (slightly higher than Nagpur) has double the vehicular population of Nagpur. The number of vehicles per 1000 persons in Nagpur is much lower than that prevailing in Chandigarh, Bangalore and Indore, though the number is increasing at a rate significantly higher than that in these cities. The average journey speed is around 25 km per hour, which is high in comparison to other Indian cities⁸. Higher vehicular speeds along with poor traffic management is leading to a high number of road accidents and rendering road safety a major area of concern for the citizens. As per the citizens' survey, about 36% of pedestrians and 46% of motorists feel that Nagpur roads are unsafe.

Public transport

Nagpur's public transportation system is operated and maintained by Maharashtra State Road Transport Corporation (MSRTC). NMC has to work in close coordination with MSRTC to improve the existing public transportation system. The responsibilities of the Traffic Department of NMC in consultation with the Traffic Police Department, include traffic-related works such as installation and maintenance of traffic signals and improvement of traffic junctions.

The existing public transportation system of the city is highly inadequate, in terms of both capacity and reliability. MSRTC operates city buses, which cater to about 6% of city trips. Travel demand in the city is primarily catered to by personal modes and auto-rickshaws.

⁸ Techno-economic feasibility study for the proposed mass rapid transit system in Nagpur city, L&T – Ramboll Consulting Engineers Ltd., March 2004.

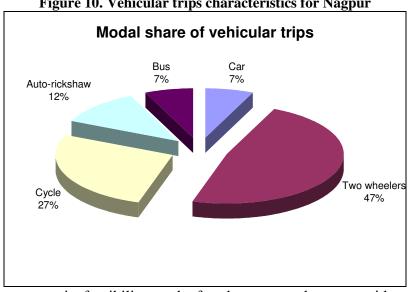


Figure 10. Vehicular trips characteristics for Nagpur

Source: Techno-economic feasibility study for the proposed mass rapid transit system in Nagpur city, L&T – Ramboll Consulting Engineers Ltd., March 2004

Overall, Nagpur has a better road infrastructure as compared to that of other cities in India. With the anticipated growth in economic activity in the city, there will be a corresponding rise in purchasing power amongst its citizens. This will trigger a massive increase in vehicle ownership patterns in the city. This might become an issue due to related problems like safety, congestion, pollution, etc. The city needs to prepare itself for these problems in advance. Solutions may lie in widening the road network in congested areas, introducing better parking norms and facilities, strictly enforcing encroachment norms, practicing scientific traffic management and instituting an effective public transportation system.

4.1.6 **Street lighting**

The provision of street lights as well as their replacement and maintenance is the responsibility of Nagpur Municipal Corporation. After the roads were widened under the IRDP, it was observed that the street lighting was inadequate. Therefore, to improve illumination levels, the City Lighting Improvement Project (CLIP) was taken up. All the 60 major roads constructed under IRDP were provided with sodium vapour lights. Similarly, high masts were provided at 60 traffic junctions. The overhead lines, HT and LT poles, have been replaced with underground cables. Tube lights have been replaced by sodium vapour lights on all the major roads. The new system also has energy-saving devices, automatic switch-on-switch-off arrangements, closed luminaries, etc. The Corporation has entrusted the entire work of managing the tube lights and other fixtures to various contractors in different wards.

There are about 71,738 street lights in Nagpur⁹. The number of connections per unit of road length was found to be comparable to cities like Bangalore, Indore and Chandigarh. The percentage of connections in working condition is the highest in Nagpur compared to other

⁹ Source: Environmental status report, 2002-03, NMC.

Indian cities like Ahmedabad, Bangalore, Surat, Lucknow, Indore and Chandigarh (Source: City Monitor Report 2002, AMA Centre for Management of Civic Affairs, Ahmedabad Management Association).

4.1.7 Education

A few decades back, educational facilities were totally in the hands of the Nagpur Municipal Corporation and Zilla Parishad. Recently, private educational institutions have been showing interest in the city. Nagpur can already boast of some high quality schools. Students from other countries come to Nagpur to study in these schools. Besides schools, institutions for higher-level education, like medical and engineering colleges, are also present in the city in good numbers.

As per Census of 2001, the total population of Nagpur city was about 20.5 lakhs, of which about 2.4 lakhs are children of less than six years of age, while 2.6 lakhs are aged between 6-20 years. Of these, about 4.6 lakhs are enrolled in schools. About 1250 students are enrolled in the 12 medical colleges whereas 3192 students are completing their education in 15 engineering colleges.

4.1.8 Medical facilities

Nagpur provides medical facilities across service levels and categories. There are numerous full-service hospitals in the city. These are owned and operated by several agencies including the central government, charity organizations, corporates, etc. Some of these are listed below.

Table 5. List of medical facilities in Nagpur

Government	Charitable hospitals	Private hospitals
Govt. Medical College	RadhaKrishna Hospital	Lata Mangeshkar Hospital
Govt. Dental College	Nagrik Sahakari Hospital	BhauModak Medical College
Govt. OTPT College	Dalvi Hospital	Jupiter Ayurvedic College
Indira Gandhi Medical College	Janta Maternity Home	Nagpur Homeopathy College
Daga Hospital	Matru Sewa Sangh Sitabuldi	Dabha Homeo Medical College
ESIS	Matru Sewa Sangh Mahal	Lata Mangeshkar Dental College
Govt. Ayurvedic College	Mure Memorial Hospital	Wockhardt Heart Hospital
Govt. Mental Hospital	Nagpur Homeopathy College	Orange City Hospital
Central Railway Hospital	Tirpude Hospital	
Pachpaoli Maternity Home	Shri. Pakwasa Ayurvedic Hospital	
Indira Gandhi Rugnalaya		
Isolation Hospital		

Source: NMC officials

Besides these, there are about 750 nursing homes. Overall, there are about 7500 hospital beds in the city. These are duly supplemented by 39 dispensaries and six mobile dispensaries, which are run by the Municipal Corporation. The city's medical infrastructure also includes 3000 private clinics and 67 pathology laboratories and blood banks. It caters to patients coming from villages around the city and even from Madhya Pradesh, Andhra Pradesh, and Chattisgarh. A large number of these people come to the city for specialty health care.

While the population of the city is increasing day by day, the number of beds of government hospitals remains more or less constant. There is an urgent need to expand the bed strength of these hospitals to satisfy the growing demand. Since poor and below-poverty-line patients go

to these hospitals, it is extremely important to increase the bed strength of the Government Medical College and the Daga Hospital.

4.2 Access of slum dwellers to basic services

Urban poverty and the growth of slums in Nagpur reflect a skewed development process, one in which the seat of enterprise and industry in the city have led to the large-scale migration of both unskilled and skilled workforce. But land availability, affordable housing and services standards have not been able to keep pace with the influx.

In Nagpur, 40% of the population lives in slums. There are about 427 slum pockets in the city spread over an area of about 17 sq. km. Of the 427 slums, 292 slums housing 80% of the slum population are notified. In 1997, the slum population of Nagpur was about 6.61 lakhs, which increased to 7.4 lakhs in 2001 and 8.08 lakhs in 2005, thus showing a growth of 22% in the last eight years. This statistic is alarming for a growing city like Nagpur. (The demographic characteristics of the slum population of Nagpur have already been covered in section 3.4). The slums are spread over the geographical expanse of the city. The area of slum pockets varies from 2,000 to 50,000 sq. m.

In order to formulate a workable solution, the issue of slum rehabilitation has been addressed through a zonal approach. The city has been divided into five zones, manageable in terms of size and population. A large number of slum pockets exist in the north and west, followed by the east zone.

Table 6. Details of slum population of Nagpur

Zone	No. of pockets	slum	households	of in	Slum population (in lakhs)	Area covered under slums (in Ha)
			slums			
East		102	425	500	2.36	409.46
West		111	274	100	1.66	413.7
North		120	67	45	0.38	378.86
South		58	195	500	1.12	186.08
Central		36	172	200	0.98	233.36
Total		427	1133	345	6.5	1621.46

Source: Slum department, NMC

The number of BPL (below poverty line) families has also been constantly increasing in the city. As per the Social Welfare Department of NMC, the total BPL population in 1997-98 was 4.1 lakhs; this increased to 10.25 lakhs in 2005.

The exact statistics regarding access to basic services in the slums is not available with NMC. This poses a serious limitation for the decision-makers, for identifying the exact extent of gaps in basic infrastructure. In the process of preparation of the City Development Plan, various consultations have been held with stakeholders including relevant officials from NMC, slum dwellers and representatives from NGOs working in the slum areas. Some of the key issues highlighted during the consultations are explained below.

Slum pockets are located in low lying and water logged areas and face problems of general squalid conditions, unhygienic surroundings, and temporary structures. Malnutrition, poor

civic amenities, and inadequate sanitation are widespread in the slums increasing the vulnerability of the urban poor.

The low income levels in the slums adversely affect their ability to pay for basic services like water, sanitation, education and health. Slums dwellers are mostly employed in the informal sector and lack social security and safety nets. Thus they cannot access credit to maintain or upgrade their residential units.

The current city planning approach has neglected the significance of informal sector establishments for the city. There is a need to create better infrastructure facilities for the informal work force that supplies cheap labour to the city. Availability of resting sheds, water, sanitation facilities, etc. on these sites is almost completely lacking. Development plans should identify and demarcate hawking and non-hawking zones in the city. The areas for these zones and parking stands for rickshaw pullers should be accurately worked out. The absence of such planning has intensified the problem of traffic congestion in the city.

Slum redevelopment schemes are often implemented in isolation by government agencies, without consulting the slum dwellers. The involvement of NGOs and CBOs has also been minimal in the planning and implementation of slum development schemes. In most cases, investment does not match priority needs. This is especially relevant in the case of relocation programs. Training and capacity building of NMC, NGOs and CBOs should be taken up for implementing schemes through a participatory mechanism.

The quality of construction in the programs undertaken by NMC, NIT and MHADA in the last few years has been extremely poor. There is a clear need to demarcate plots for EWS and LIG housing, keeping in mind the location of work places. Schemes also need to enable the slum dwellers to avail of appropriate credit facilities for housing and other uses.

Most of the existing slum settlements lack basic layout planning and hence do not allow access to emergency services like ambulance, fire engines, etc. This factor should be taken into account while planning future schemes.

Some of the notified slum areas already have adequate infrastructure, pucca housing and good living conditions. These should be de-notified as slum settlements and listed under the normal housing stock category in the city. This would ensure focused investments in priority areas. To make this important change, proper coordination between various developmental agencies including NMC, NIT, and MHADA is needed.

Approach so far

Several schemes have been implemented in the past to alleviate the living conditions of the slum population. Some of them are:

- National Slum Development Project for provision of basic social and physical amenities for the poor;
- Low Cost Sanitation Programme for construction of latrines and pay and use toilets;
- Lok Awas Yojana, sponsored by the Maharashtra State Government for low cost housing; residential units were constructed by slum dwellers themselves; and

• VAMBAY (Valmiki Ambedkar Malin Basti Awas Yojana), jointly sponsored by the Central and State Government for low cost housing.

The past schemes focused on the provision of physical infrastructure without taking into account the views of the slum dwelling community. So the amenities provided were underutilized, as the users were not taken into confidence. NMC under the Slum Rehabilitation Act (SRA) has initiated the SUN (Slum Up-gradation Nagpur) plan to make Nagpur a slum-free city. It involves rehabilitation and integration of socially and economically backward urban citizens. This project aims at an integrated approach to solve the slum problem with special emphasis on economic upliftment.

The primary goal of the proposed plan is to provide an improved quality of life to the slum dwellers based on the concept of HIKES (Healthy Living, Income Generation, Knowledge, Environmental Sensitivity and Socio-cultural Development). An integrated development approach has been attempted which envisages the pooling of open spaces and other facilities for common use as far as possible. The implementation of rehabilitation projects considers various factors such as the preparation of lists of all slum dwellers, issue of the same with proper identification so that they are not dispossessed of their dwellings, preparation of the slum dwellers for vacating their houses, coordination of construction activities, relocation of slum residents to transit tenements and finally their rehabilitation in the new tenements. The rehabilitation cost over the 2005-2011 period is estimated to be Rs.1350 crores. The scheme will be implemented by NMC with private sector participation.

Considering the public private partnership arrangement and the current land demand scenario in Nagpur, it is likely that only select schemes would be commercially viable under SRA. For the rest of the slums, in-situ development schemes should be promoted.

4.3 Physical and environmental aspects

The physical aspects of land relate to the availability of land, land usage pattern, extent of open spaces, etc. Land management is the most important aspect of city development; it has the potential to be the biggest facilitator or the most critical constraint for development. Land development principles of the city should be closely aligned with the economic and infrastructure base of the city.

The environment of a city is a critical determinant of the health of its inhabitants and consequently productivity. Environmental pollution has become a matter of concern in many cities in recent decades due to population explosion, industrialisation, urbanisation and increase in transportation. The issues regarding potable water quality have already been discussed in section 4.1.1. The following section deals with the status of water bodies and levels of air and noise pollution in the city. The Maharashtra Pollution Control Board (MPCB) is responsible for monitoring water quality (both surface and ground) and air quality.

4.3.1 Land use¹⁰

Since the environmental status of a city is a function of the carrying capacity of the watershed based on the sustainable development concept, discussion of the entire Nagpur District is appropriate. The Nagpur District covers an area of 9854 sq. kms. Eight categories of land use have been delineated in the Nagpur District using LANDSAT imagery on 1:250,000 scale and these have been supplemented with the vegetation map. The eight categories are dense forest (Ramtek, Umrer, Hingna, and Narkher Tehsils), sparse forest (Katol, Umrer, Bhivapur, Mauda and Parseoni Tehsils), scrub land (Kuhi, Bhivapur, Hingna and Katol Tehsils), barren land (Parseoni, Katol, Hingna, Kuhi and Bhivapur), ravine land (banks of Kanhan and Wunna rivers and their tributaries), fallow land, mines (hilly parts of Ramtek and Umrer Tehsils) and cultivated land. About two-thirds of the District is under cultivated land, followed by forest land (19%), ravines (6.57%), scrubs (6.37%) and fallow land (2.84%). Less than 1% of the land is under the mining and barren land category. Overall, the dense forest cover provides environmental buffer for the city. Large areas under scrub and fallow land also provide adequate scope for expansion.

A comparison of previous land use records reveals that the forest area of Nagpur District has decreased due to excessive human interference and cultivation has extended to marginal lands. The sparse forests and scrublands manifest degradation in the biota of the region and are usually associated with eroded hills, ridges, tablelands and their foot slopes.

The total area within the Municipal Corporation's limit is 217.56 sq. km. of which only 83.40 sq. km. (38%) is developed. About 38% of the land is under agriculture and forest cover and 4% is under nallahs and water bodies. The balance 20% cannot be developed. The distribution of the developed area (as on 25th Sept. 1984) is given in Figure 11.

As per Urban Development Plans Formulation and Implementation (UDPFI) guidelines, the land use distribution of developed land (as proposed in Development Plan) conforms to the guidelines in the case of residential usage (Figure 11). Though only 2% of the land is under parks and gardens (recreational spaces), this is adequately supplemented by the large forest cover in the city. But, land under commercial usage needs to be increased further, while the proportion of land earmarked for public and semi-public use may be decreased¹².

¹⁰ No maps which could have been reproduced in this report were available.

¹¹ Nagpur Regional Plan Report 1996

¹² The assessment is based on a land use pattern proposed in the Development Plan (1986-2011). The actual land usage pattern may be different. The actual land use pattern status is not available with NMC. They are in the process of procuring GIS based land use maps.

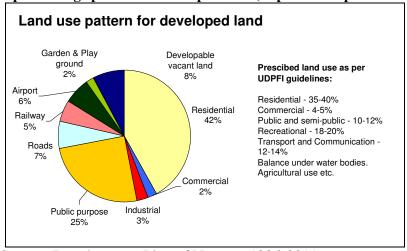


Figure 11. Proposed usage pattern of developed land (as per Development Plan 1986-2011)

Source: Development Plan of Nagpur, 1986-2011

Discussions with stakeholders including NMC and NIT officials reveal that the land demand/supply situation is well-balanced in the city. A large percentage of land within the municipal limits remains unutilized or under-utilized (in terms of permissible FSI). The FSI norms under the current development control rules are conservative. With the growth in demand, and various infrastructure up-gradation schemes underway, the norms may be revised in select areas, allowing high density development.

A similar situation prevails with respect to the city's housing stock as well. There is adequate housing stock available in the city, catering to all income groups. In spite of that, almost 40% of the population lives in slums. But, it has been noted (as mentioned in the previous section) that a large number of slum pockets are in the form of pucca housing and have adequate infrastructure provisions. Slum dwellers have also expressed preference for in-situ development over housing schemes. Thus, the overall land and housing situation in Nagpur is positive. Proper implementation processes can ensure adequate support to the anticipated economic surge.

4.3.2 Gardens and plantations

Due to tremendous population growth coupled with the increasing number of vehicles plying on the roads, the pollution in the city has been increasing over the last few years. However, the green cover in and around the city and continuous tree plantation projects have helped safeguard the environment to some extent. There are about 95 parks and gardens in the city covering about 102 ha. This is just 0.5% of the city areas, while it must be at least 1.8% as per the Maharashtra Regional and Town Planning (MRTP) Act.

NMC develops and maintains the open spaces through its Garden Department. The functions of the department include maintaining existing gardens, developing new gardens as per the norms and needs of the citizens and developing and maintaining landscapes/greenery cultivated on road dividers, intersections and channelizers. The department performs its duties as per the Maharashtra (urban areas) Preservation of Trees Act, 1975, which covers aspects like plantation of trees, preservation of existing trees, and tree census after every five years and grant of permission to citizens to cut trees, subject to specific conditions.

Various greening efforts were undertaken in Nagpur in the last few years. Roadside trees or plantations that were affected during the Integrated Road Development Project, about 700 roadside plantations, were uprooted and replanted. NMC and NIT had undertaken a programme to plant one lakh trees during 2002-03 in the NMC area. The programme was taken up with the active participation of schools, social organizations, private institutions and citizens. The saplings were provided free of cost to all the interested parties.

Nagpur had received recognition as the second greenest city in India. But the tempo of tree plantation has not been maintained and greenery has declined substantially. The key issues regarding development and maintenance of green spaces and road side plantations are water scarcity during summer season, air pollution due to increased vehicular traffic and lack of civic sense among citizens.

4.3.3 Lakes and rivers

There are several natural water bodies within the city limits including 12 lakes, two rivers and five nallahs. The lakes (Gorewada, Futala, Ambazari, Sonegaon, Sakkardara, Gandhisagar, Lendi Talao, Naik Talao, Dob Talao, Pandrabodi, Sanjay Nagar Khadan and Pardi) cover an area of about 3.13 sq. km.. The Nag and Pili Rivers cut across the city and are 15.73 km. and 12.11km. in length, respectively. Besides these, Chamar Nallah, Shakti Nagar Nallah, Hudkeshwar Nallah, Swawalabmi Nagar Nallah and Sahakar Nagar Nallah also flow through the city.

Though exact data is not available, it has been observed that all the water bodies are highly polluted. This is mainly due to the free flow of untreated sewage into these rivers and nallahs. The water quality data for some of the lakes is given in Table 7.

Stakeholder consultations have also revealed that some of the lakes have been filled for development purposes. In some cases, slums have expanded into lake areas. This is not only leading to lake degradation, but also poses a threat for the slum population. Issues have also been raised regarding the nature of development around the lakes. Intensive activities around the river bodies are also adversely affecting the bio-diversity. Clear reservations need to be marked and strictly implemented for the water bodies. Also, strong steps need to be taken for the rejuvenation of these water bodies. Some beautification and recreational projects have been taken up for the Ambazari and Gandhisagar Lakes. Similar activities have been proposed for Futala, Sakkardara and Naik Talao.

Table 7. Water quality of lakes in Nagpur

Parameter	Water standards inland water (C	surface	Ambazari	Telakhandi	Shukhawari	Lendi	Dob
	A^{13}	B^{14}					
рН	6.5-8.5	6.5-					
		8.5	7.2	7.0	7.2	6.5	5.8
TDS (max)	500	-	45	47	70	75	71
BOD (max)	2	3	8	10	8	12	15
COD			60	60	70	70	65
DO (min)	6	5	6.3	6.3	4.0	1.8	Nil
Nitrates (max)	20	-	10	10	12	31	16
Phosphates	-	-	0.1	0.8	0.4	35	1.2

Source: Environmental Status Report, 2002-03, NMC

4.3.4 Air and noise pollution

Nagpur is a centrally located land-locked city with moderate commercial and industrial growth. It is a center of industry, education and agriculture in the Vidarbha region. The strategic location of the city has led to rapid expansion and increased environmental problems, especially air, water and noise pollution. The city also experiences a high floating population causing pressure on its civic services. As mentioned in the previous section, Nagpur has maintained its green cover to a large extent. The ecological balance is positive and its land to population ratio is also favorable. However, with further increase in population, this situation may change soon. Hence, conscious steps would need to be taken for ensuring the city's environmental sustainability.

Air Quality Index (AQI) indicates overall pollution concentration in the air. The higher the index value, the greater is the level of air pollution and health risk. The AQI for Nagpur for the 60-month period 1997-2002 has been given below.

Table 8. Air quality index of Nagpur city

Table 6. All quality flues of Nagput City										
Air quality	Air Quality	Industri	Industrial		Commercial		tial			
	Index range									
	%age	%age	No. of	%age	No. of	%age	No. of			
			months		months		months			
Good	0 - 25	13.33	8	6.67	4	36.67	22			
Fair	25 – 50	66.67	37	66.67	40	51.67	31			
Moderate	50 – 75	20.00	12	21.67	13	10.00	6			
Unsatisfactory	75 – 100	5.00	3	1.67	1	1.67	1			
Harmful	>100	0.00	0	3.33	2	0.00	0			

Source: Environmental Status Report, 2002-03, NMC

¹³ Drinking water source without conventional treatment but after disinfection.

¹⁴ Outdoor bathing.

The AQI computed for the industrial area during the five-year period (1997-2002) highlights that the pollution level was the highest during December 1998 (93.22%) and lowest during August 1997 (17.54%). In the commercial areas, during the months of October and December 1999, the AQI crossed the permissible limit of 100% marginally. In the residential areas, it ranged between 73.9% and 76.0%. Overall, the AQI was within the permissible limit almost the entire period and was within 'fair' limits for most of the period.

To assess the level of specific pollutants, i.e., suspended particulate material (SPM), SO₂ and NO₂, data was collected over a five-year period on an eight-hourly basis. The following figures present the observations made at 15 points across the city in the February 2003.

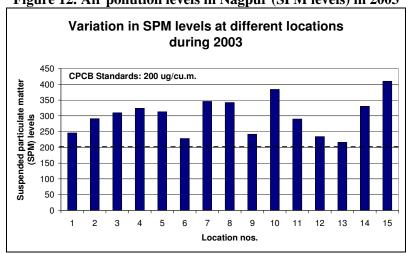


Figure 12. Air pollution levels in Nagpur (SPM levels) in 2003

Source: Environmental status report, 2002-03, NMC

The concentration of SPM (in commercial and residential areas) has crossed permissible limits in some instances during this period. The current status (2003) indicates that in all residential and commercial areas, the SPM concentration is above the prescribed limits at all the observation points (Figure 12). The increase in SPM does not necessarily occur due to vehicular pollution alone. The untidy conditions of the roads with debris and lack of vegetation along their alignment also contribute to the pollution. The problem becomes severe in congested areas where construction schemes accumulate building materials and debris gathers in carriageways due to the shortage of adequate and appropriate space. The concentration of SPM (industrial), SO2 and NO2 in Nagpur is well within the limits as per NAAQS (National Ambient Air Quality Standards (NAAQS) of India) standards during 1997-2001.

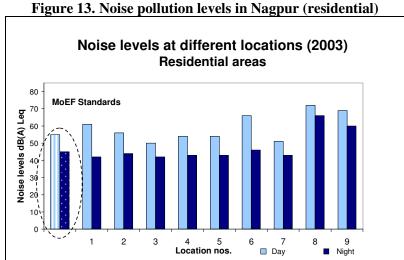
It may be concluded that air quality in Nagpur is very good in spite of the fact that the city provides facilities similar to that of a metropolitan city. The current low level of pollutants give the city an edge over others in terms of offering a good quality of life. The high levels of SPM are mainly due to construction activity and road dust, which should decrease by the time the current phase of hectic construction concludes.

Noise pollution

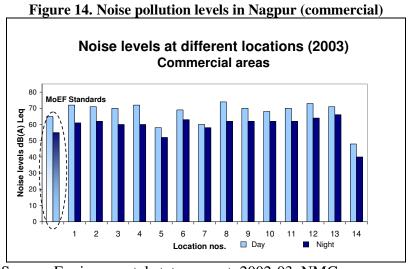
During various activities such as the movement of people, machinery and vehicles, a certain amount of noise is generated. When noise levels are very high, it leads to adverse effects on the health of the citizens. The Ministry of Environment and Forests (MoEF) has specified

permissible limits of noise for different types of areas. To assess the noise levels in different areas of Nagpur, a survey was carried out in March 2003.

It was observed that in the residential areas, noise is exceeding the limits during the daytime. The levels at night in most cases are observed to be within limits. In the case of commercial areas, noise levels exceed the permissible limits during both day and night time (Figure 14). This is mainly due to high vehicular traffic.



Source: Environmental status report, 2002-03, NMC



Source: Environmental status report, 2002-03, NMC

Noise levels in the silent zones exceed the limits in most of the cases in both day and night time. This clearly indicates the need to enforce the regulations more stringently and declare such areas as silent zones as required by the noise pollution control rules.

4.4 Institutional structure of urban governance

The Municipal Council for Nagpur was established in 1864. At that time, the area under the jurisdiction of the Nagpur Municipal Council was 15.5 sq. km and the population was 82,000.

The duties entrusted to the Nagpur Municipal Council were to maintain cleanliness and arrange for street lights and water supply with government assistance. In 1922, the Central Provinces & Berar Municipalities Act was framed for the proper functioning of the Municipal Council.

On 22nd January 1950, CP & Berar Act No. 2 was published in the Madhya Pradesh Gazette which is known as the City of Nagpur Corporation Act, 1948 (CNC Act). The Municipal Corporation came into existence in March 1951. The first development plan of the city was prepared in 1953. In the year 1956, under the state reconstitution, the Berar Province merged into the Maharashtra State with Mumbai being recognised as its capital; in 1960, Nagpur was declared as the second capital of the state.

As per the CNC Act, 1948, the key responsibility for providing Nagpur's citizens basic urban services lies with the Nagpur Municipal Corporation. These services include water supply, sewerage, waste management, slum improvement, land use planning, construction and maintenance of internal roads, street lighting, maintenance of parks and gardens, providing primary health and education facilities, etc. NMC co-ordinates with various other government organizations like NIT, MHADA, MSRTC, the Traffic Police, MPCB, etc. for delivering these basic urban services. (Details of the responsibilities have been given in Annexure III.) Some other important government agencies involved directly/ indirectly in providing services to the citizens are listed below:

- The Maharashtra State Road Transport Corporation (MSRTC) provides and maintains the bus based public transportation system in Nagpur.
- The city police maintain general law and order in the city. It also provides protection to VIPs and VVIPs visiting the city.
- The Archaeological Department of India protects heritage structures of national significance. It also maintains the central museum of the city.
- Bharat Sanchar Nigam Limited (BSNL) and Mahanagar Telephone Nigam Limited (MTNL) provide communication services.
- The Maharashtra Tourism Development Corporation (MTDC) provides assistance and tourism related facilities at select places around the city.

4.4.1 Structure of Nagpur Municipal Corporation

The Corporation elects a Mayor who along with a Deputy Mayor heads the organization. He carries out the activities through various committees such as the Standing Committee, health and sanitation committee, education committee, water works, public works, public health and market committee. The administrative head of the Corporation is the Municipal Commissioner, who along with the Deputy Municipal Commissioners, carries out various activities related to engineering, health and sanitation, taxation and its recovery. Various departments such as public relations, library, health, finance, buildings, slums, roads, street lighting, traffic, establishment, gardens, public works, local audit, legal services, water works, education, octroi and fire services manage their specific activities. The activities of NMC are administered by its zonal offices. There are 10 zonal offices in Nagpur – Laxmi Nagar, Dharampeth, Hanuman Nagar, Dhantoli, Nehru Nagar, Gandhi Baugh, Sataranjipura, Lakkadganj, Ashi Nagar and Mangalwari. As per NMC's records, it has 10,450 employees at present (against a requirement of 12596) across more than 20 departments. The organizational structure of NMC is shown in Figure 15.

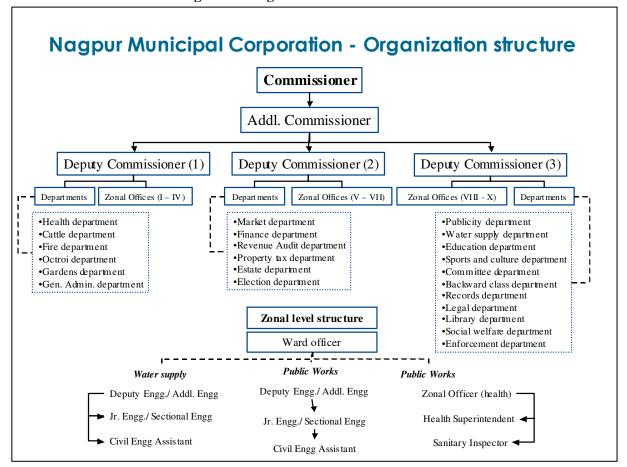


Figure 15. Organizational structure of NMC

Source: NMC officials

4.4.2 Public private partnerships

NMC has also entered into public-private partnership contracts for the delivery of some its services. The level of private participation varies across services. A summary of these has been given in Table 9.

Table 9. Role of private players in urban services provided by NMC

Service/ sector	Role of private sector
Water supply	Contractors are responsible for running and maintaining select water treatment facilities to assure minimum quality of water. These treatment facilities are: P-II (133 MLD) P-III (120 MLD) Old Gorewada Plant (16 MLD) Operation and maintenance of valves at reservoirs Computerization and preparation of water bills
Sewerage	The sewage treatment facility (100 MLD capacity) at Bhandewadi has been outsourced. The contractor is responsible for treating the sewage as per the standards laid down by MPCB.

Service/ sector	Role of private sector						
Solid waste	Door-to-door collection and transportation of solid waste.						
management							
Roads and	MSRTC has outsourced the road tax collection process at all the entry						
bridges	points in the city.						
Street lighting	Operation and maintenance of street lights.						

Source: NMC

4.4.3 Key issues

The land management function in Nagpur is handled by two agencies – Nagpur Improvement Trust (NIT) and Nagpur Municipal Corporation. The current Development Plan (1996-2011) was prepared by NIT. As per the Government of Maharashtra notification, dated 27th February 2001, NMC has been permitted to exercise the powers of a Planning Authority in the entire area under its jurisdiction except the areas covered by the seven NIT schemes. These schemes cover about one-third of Nagpur's municipal area. Hence, NIT's role within the city area is limited to the regularization and maintenance of unauthorized layouts under the Gunthewari Act. Eventually, these schemes would also be handed over to NMC. NIT is also preparing development plans for select metropolitan schemes¹⁵ in fringe areas. But due to the lack of financial resources, NIT is unable to acquire land for developing these schemes. Land pooling options are not provided for under the NIT legislations. Also, there is a need to constitute a planning authority for the urban agglomeration, supported with modern land management legislations. Hence, in the current institutional arrangement, the significance and viability of NIT has become minimal.

Secondly, the Nagpur Municipal Corporation Act does not mention that the provision of public transport is the responsibility of NMC. Thus, Maharashtra State Road Transport Corporation (MSRTC) has taken the responsibility of providing bus transport services in Nagpur. For MSRTC, the provision of urban transport in cities like Nagpur is a loss making operation. This strains its already fragile financials. MSRTC is thus not keen on expanding its service in the city of Nagpur. For instance, in 1999 there were about 250 MSRTC buses serving Nagpur city while in 2006, the number stands at 175. MSRTC is willing to transfer the responsibility to NMC. But NMC does not have the financial or managerial capacity to provide urban transport services. This has led to considerable deterioration in service levels in the city.

4.5 Financial profile of Nagpur Municipal Corporation

The finances of NMC have been reviewed for the five-year period 2001-2005. The items of both receipts and expenditure are classified under revenue and capital accounts as per their sources and uses. In 2004-05, the revenue income of NMC has grown to Rs.324 crores from Rs.232 crores in 2000-01. During this period, revenues have registered a compounded annual growth rate (CAGR) of 6.9%, while revenue expenditure has increased at a CAGR of 9.0%.

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¹⁵ These refer to layouts whose development is the responsibility of NIT.

In absolute terms, the revenue expenditure in 2004-05 was Rs.254 crores. The revenue account surplus in 2004-05 was Rs.78 crores.

Table 10. Financial status at a glance

In Rs lakhs	2000-01	2001-02	2002-03	2003-04	2004-05	CAGR
Revenue Account						
Income	23,279	27,041	27,155	31,768	32,489	6.9
Expenditure	16,533	18,270	22,462	22,519	25,430	9
Surplus /(Deficit)	6,746	8,771	4,693	9,249	7,059	0.9
Capital Account						
Income	3,470	165	6,610	0	0	
Expenditure	4,686	8,794	9,595	8,032	7,798	
Surplus /(Deficit)	-1,216	-8,629	-2,985	-8,032	-7,798	
Overall						
surplus/(deficit)	2,766	-947	4,448	-1,146	1,898	64.5

Source: NMC Annual Accounts

The capital income of NMC mainly comprises loans. In the last two years, NMC has not availed of any loans for its capital expenditure. The capital expenditure in the last four years has averaged around Rs.80 crores annually. In 2004-05, NMC had an overall surplus position of Rs.18.98 crores. The following sections provide a review of the revenue account in order to assess the municipal fiscal status.

4.5.1 Revenue account

The revenue account comprises two components - revenue income and revenue expenditure. Revenue income comprises internal resources in the form of octroi, tax and non-tax items. External resources are in the form of shared taxes/transfers and revenue grants from the State and Central Government. Revenue expenditure comprises expenditure incurred on salaries, operation & maintenance cost, and debt servicing.

Revenue Income- General Account

The revenue sources of NMC can be broadly categorized as own sources, grants, and contributions. The source-wise income generated during the review period is presented in Table 11.

Table 11. Source-wise revenue income

Table 11. Source-wise revenue income								
	2000-	2001-	2002-	2003-	2004-	CAGR		
In Rs lakhs	01	02	03	04	05	%		
Octroi	10,186	11,753	12,498	13,387	15,296	8.5		
Change y-o-y %		15.4	6.3	7.1	14.3			
As % of Revenue Income	43.8	43.5	46	42.1	47.1			
Property Tax	4,433	5,913	6,058	5,522	5,796	5.5		
Change y-o-y %		33.4	2.5	-8.9	5			
As % of Revenue Income	19	21.9	22.3	17.4	17.8			
Other Taxes	1,312	1,403	1,992	4,827	2,071	9.6		
Change y-o-y %		6.9	42	142.3	-57.1			
As % of Revenue Income	5.6	5.2	7.3	15.2	6.4			

In Rs lakhs	2000- 01	2001- 02	2002- 03	2003- 04	2004- 05	CAGR %
						· ·
Total Revenue Income	15,931	19,069	20,548	23,735	23,163	7.8
Change y-o-y %		19.7	7.8	15.5	-2.4	
Non-tax Revenues						
Water Charges	3,123	4,384	4,507	4,891	5,146	10.5
Change y-o-y %		40.4	2.8	8.5	5.2	
As % of Revenue Income	13.4	16.2	16.6	15.4	15.8	
Other charges	1,724	756	77	142	108	42.5
Change y-o-y %		-56.1	-89.8	84.4	-23.9	
As % of Revenue Income	7.4	2.8	0.3	0.4	0.3	
Total Non-Tax Revenues	4,847	5,140	4,584	5,033	5,254	1.6
Change y-o-y %		6	-10.8	9.8	4.4	
Capital Grants	2,501	2,832	2,023	3,000	4,072	10.2
Total Revenue Income	23,279	27,041	27,155	31,768	32,489	6.9

Own Sources

Own source income includes income from octroi, property tax, other taxes and non-tax income in the form of income from municipal properties and other miscellaneous income. Income from own sources accounted for over almost 88% of total revenue income (2004-05), indicating low dependence of NMC on external sources for its operations. The own sources have grown at a CAGR of over 6.4% during the 2001-2005 period. Grants, which contribute about 12.5% of total revenue income, have been growing at a higher pace than own sources in the period under review.

Octroi

Octroi is a local tax charged on all goods entering the city; it is levied based on the category of goods (weight, numbers, etc.). It is the single largest source of NMC's income accounting for about 47.1% of municipal revenue income in 2004-05; during the review period, it has registered a CAGR of 8.5%. In 2004-05, octroi revenues reported a year-on-year (y-o-y) growth of 14.3%.

Property Tax

The tax collected on property includes various other taxes levied as part of property tax. It consists of general tax on properties, sewerage tax, water tax, light tax, education cess and EGS cess. It is charged based as a percentage of Annual Rental Value (ARV). The education cess and EGS cess are collected on behalf of the State Government.

In NMC, the property tax accounted for about 18% of municipal revenue income (2004-05) and registered a CAGR of 5.5%. The overall collection performance stands at about 52% of the total demand (2004-05), indicating scope for further improvement of collection efficiency.

Table 12. Property tax details and DCB statement

	2000-01	2001-02	2002-03	2003-04	2004-05
Collection - Rs. Lakh					
Arrears	1,848	2,601	2,455	1,959	2,041
Current	1,931	2,422	2,687	2,697	2,844
Total Collection	3,779	5,023	5,142	4,655	4,885
Balance - Rs. Lakh	3,917	5,650	5,074	3,333	2,682
Collection Performance - %	52.7	49.9	55.9	54.2	51.8

According to NMC, there are about 50,000 properties, which are currently outside the property tax net. Also, for around 50,000 properties the property description is not as per the status in the asset register.

Non-tax Revenues

Non-tax sources include all non-tax revenues such as fees and charges levied as per the Municipal Act and services provided by the NMC. These sources include water and sewerage charges, income from building license fees, development charges, income from municipal properties and other fees. The non-tax income of NMC accounted for about 16.2% of the municipal revenue income (2004-05) and registered a CAGR of 1.6% in the five-year period ending in 2004-05.

External Sources

External sources mainly include grants from State and Central Government. All the external sources together account for about 12.5% of revenue income. These sources indicated a growth of 10% over the past five years.

Revenue Expenditure

Revenue expenditure of NMC has been analysed based on expenditure heads which are broadly classified under the following departments/sections of NMC -- General Administration & Tax Collection, Public Works, Public Health (General & Medical), Education, and Miscellaneous.

Revenue expenditure is further classified into establishment, operations and maintenance and debt servicing.

Table 13. Application of funds by head of account

	2000-	2001-	2002-	2003-	2004-	CAGR
In Rs lakhs	01	02	03	04	05	%
Revenue Expenditure						
Establishment	10,268	11,083	11,763	12,232	13,326	5.4
As % of Revenue Expenditure	62.1	60.7	52.4	54.3	52.4	
As % of Revenue Income	44.1	41	43.3	38.5	41	
O&M	5530	5921	5556	7078	8094	
As % of Revenue Expenditure	33.4	32.4	24.7	31.4	31.8	
As % of Revenue Income	23.8	21.9	20.5	22.3	24.9	
Debt Servicing	735	1,266	5,143	3,209	4,010	40.4
As % of Revenue Expenditure	4.4	10.5	7.4	9.4	12.5	
As % of Revenue Income	3.2	6.9	22.9	14.3	15.8	
Total Revenue Expenditure	16,533	18,270	22,462	22,519	25,430	

	2000-	2001-	2002-	2003-	2004-	CAGR
In Rs lakhs	01	02	03	04	05	%
As % of Revenue Income	71	67.6	82.7	70.9	78.3	

Establishment Expenditure

A large portion of the establishment expenditure includes salaries paid to municipal employees and contract workers. The expenditure on establishment accounted for about 45% of revenue income and 66% of revenue expenditure in 2004-05. This expenditure has been growing at a rate higher than that of revenue income.

O&M Expenditure

The expenditure on O&M has been volatile in the period under review. Its share of revenue expenditure has varied from a high of 42.2% in 2000-01 to a low of 15.8% in 2002-03.

Table 14. O&M expenditure

In Rs lakhs	2000-01	2001-02	2002-03	2003-04	2004-05
O&M on old assets	7410	7694	3174	6012	7672
As % of revenue	<u> </u>				
expenditure	42.2	38.4	15.8	28.1	34.1

4.5.2 Capital account

In general, the capital income of NMC comprises loans, grants and contributions. NMC has not availed of any loans in the past two years.

Table 15. Capital receipts

Capital Receipts	2000-01	2001-02	2002-03	2003-04	2004-05
Total Receipts	3,470	165	6,610	0	0
Loans	3,240	0	6,000	0	0
Debentures	230	165	610	0	0

Capital Expenditure

In 2004-05, the total capital expenditure of NMC was Rs.79 crores. The bulk of the capital expenditure has been on water supply, public works and roads.

Table 16. Capital expenditure

Tuble 10. Cubital experiation											
Sector	2000-01	2001-02	2002-03	2003-04	2004-05						
Water Works	1053	2274	4156	1853	528						
Public Works	1301	2276	1632	1837	2378						
Roads	1579	3234	2794	2500	3233						
Lighting Department	350	437	564	872	629						
Gardens	48	130	80	131	117						
Others	353	444	369	838	1031						
Total Capital Expenditure	4685	8794	9595	8032	7915						

4.5.3 Cost recovery on services

Water supply

In the case of water supply, NMC's revenue expenditure exceeds revenue income in each of the years of operation being reviewed. For sustainability of operations, it is important that NMC is able to realise 85% recovery of revenue expenditure.

Table 17. Water supply income and expenditure

	2001-02	2002-03	2003-04	2004-05
Revenue Income	4767	4824	5224	5403
Revenue Expenditure	5156	7586	7746	5961
Surplus /(Deficit)	(389)	(2762)	(2522)	(558)
Capital Expenditure	2274	4156	1853	528

Sewerage

NMC collects sewerage charges as part of property tax collection. The sewerage network is estimated to cover only 70% of the population. But the sewerage tax is levied on all properties irrespective of the existence or non-existence of a sewerage network. The sewerage tax collected is higher than the cost incurred on operating and maintaining the sewerage system. The sewerage system is inadequate at present. Also, the sewage treatment plant has a capacity of 100 MLD while the daily sewage generation is to the extent of 285 MLD. The untreated sewage is the cause of ground water pollution in several places in the city. The current revenues will prove to be insufficient to meet the operation and maintenance expenditure of a sewerage system built to provide 100% geographical coverage and adequate sewage treatment capacity.

Table 18. Sewerage income and expenditure

		-			
In Rs lakhs	2000-01	2001-02	2002-03	2003-04	2004-05
Revenue Income	1056	1334	1493	1507	1609
Revenue Expenditure	57	171	194	320	281
Surplus /(Deficit)	998	1163	1299	1187	1328
Capital Expenditure	170	113	78	294	432

Solid Waste Management

NMC currently incurs a revenue expenditure of about Rs.35 crores (2004-05) on solid waste management while there is no direct revenue generated under this head. NMC incurs an expenditure of Rs.5.5 per household for door-to-door collection of solid waste. NMC plans to gradually recover this from every household. The revenues realised will be less than Rs.3 crores. This is insufficient to cover the expenses incurred by the Solid Waste Department.

Table 19. Solid waste management expenditure

In Rs lakhs	2000-01	2001-02	2002-03	2003-04	2004-05
Revenue Expenditure	2623	2732	2967	3426	3516

5. DEVELOPING A VISION FOR THE CITY

The vision for Nagpur was formulated by stakeholders through a consensus approach and continued consultation with the community in an integrated manner. The consultations revolved around the city's strengths, current issues, concerns, problems and the areas that need to be focussed on to achieve the desired results. The citizens also formulated the sector wise mission statements.

5.1 Steps leading to preparation of vision and mission statements

After completing a rapid assessment of the city's infrastructure, physical and environmental aspects, and institutional and financial status, a consultative process was started with a capacity building session for NMC Officials.

The workshop held on January 17th, 2006, served to explain the purpose of the CDP, the ownership of the plan, and the need for establishing or strengthening partnerships to leverage NMC's role in facilitating economic growth and improving quality of life. The officials of other government departments such as telecommunications, transport and power who have a stake in the development of the city were also involved in this workshop.

This was followed by a capacity building session for stakeholders. Several workshops were conducted to inform various stakeholders about the objectives of JNNURM and the process of preparing the CDP. These included sessions for business groups, trade associations, clubs and NGOs.

In order to reach out to a larger section of people, several mass communication steps were taken. A JNNURM workshop was conducted for representatives of the press and the electronic media. The objective was to publicize the CDP and motivate people to involve themselves in its preparation. Suggestions and comments were solicited from citizens by way of newspaper articles and interviews, emails and 'CDP suggestion boxes' kept in every NMC ward office. Banners inviting suggestions and comments were placed at several vantage locations in the city.

In an effort to trigger a discussion in every household, school children were encouraged to answer in short sentences questions like 'What do you like about Nagpur?', 'What do you dislike about Nagpur?' and 'I dream of Nagpur as ...' It was envisaged that answering these simple but thought-provoking questions would precipitate a larger discussion amongst parents and elder stakeholders of the city. To this end, a public meeting was arranged; about 200 teachers attended it. The teachers were asked to collect responses from students in the form of essays and send the best responses and a compilation of the same to the ward offices.

On 23rd January, a kick-off workshop with NMC officials was organized. This workshop focused on highlighting the current status of all the services provided by various NMC departments and the key issues confronting each department. Each department of NMC outlined its vision for the city of Nagpur and a plan of action that it would follow to realize the vision. In a seven-hour workshop, all the NMC departments presented their findings.

As a follow-up to the kick-off workshop, CRISIL Infrastructure Advisory on behalf of NMC consulted several stakeholders individually. Through these interviews, the stakeholders got an opportunity to articulate what steps they see as necessary for the further economic growth of Nagpur and the improvement of its quality of life. The stakeholder workshops conducted prior to individual consultations had paved the way for a more productive and meaningful discussion on the state of affairs in Nagpur city.

The consultations held so far were concluded with a visioning workshop with stakeholders. NMC officials and the stakeholders together carried out the visioning exercise at this workshop. The workshop started with a plenary session in which the NMC mission statements and the perceived needs of the stakeholders were compared and presented. The comparison also served to identify additional priorities not mentioned by the NMC officials as well as discrepancies between the services proposed by NMC and the stakeholders' perception of such services. The aim of the plenary session was to reach an initial consensus on the main focus areas. Breakout sessions followed to deliberate how NMC and the stakeholders could reduce the city's weaknesses and contribute to the city's strengths. Detailing of the mission statements was done by identifying major actions required to overcome impediments or build upon opportunities for economic growth and/or improved quality of life. During the workshop, action areas were identified and mapped and stakeholders were identified for each mission statement.

In the course of the workshop, the participants were divided into groups. Each group represented a particular sector. The participants were given an opportunity to select a group, discuss issues in their respective sector and present their findings to all the participants for further discussions. The stakeholder groups presented their perspectives. This was followed by a concluding presentation by the Commissioner of NMC.

5.2 Vision for Nagpur

As a result of the above-mentioned workshops with NMC officials and stakeholders in Nagpur, the vision for Nagpur is emerging as follows:

The Growth Nucleus of Central India

... An eco-city that provides adequate, equitable, sustainable access to urban services for all citizens

... A city that is safe, livable and promotes growth of its citizens

The workshops have also indicated that to achieve this vision, NMC should support the following growth themes:

- The city should attain a key position in IT, ITES and health services related industries
- Support industrialization in its hinterland
- Promote education, culture and tourism

To achieve the growth and vision defined above, certain mission statements were also defined for every sector. Some of the key mission statements are given below. These are followed by individual vision and mission statements.

- 100% coverage in water supply and improved service levels
- 100% coverage in sewage collection
- Improved road safety and better traffic management through provision of flyovers, bridges, parking facilities, etc.
- 100% solid waste collection efficiency and disposal of waste in environmentally friendly manner

5.3 Sector specific mission statements

Keeping this vision in mind, the stakeholders and NMC officials designed the mission statements for each sector.

5.3.1 Water supply and distribution

"Water for all and 24 x 7 supply" was the identified sector vision.

To achieve this vision, NMC officials and stakeholders suggested that a water audit and energy program should be implemented. NMC should strengthen the water supply system. While implementing the Pench-IV water supply project, raw water transportation losses should be minimized. Steps must be taken in the direction of augmentation of water sources and encouragement of water reuse.

5.3.2 Sewerage

"100% coverage in sewage collection and treatment" was the identified sector vision.

NMC must identify projects for strengthening the existing sewerage network. There is a need to set up sewage treatment plants to meet the current demand-supply gap. While designing the new sewage system for the city, changing old and defective sewer lines must be considered.

5.3.3 Storm water drainage

"Strengthening and rejuvenation of natural drainage system" was the identified sector vision.

NMC must focus on the rejuvenation of the Nag and Pilli Rivers, nallah canalization and hence the strengthening of the natural drainage system. Lake rejuvenation must be included in the development process as a priority area. All the roads must have storm water drains to prevent flooding during peak periods.

5.3.4 Solid waste management

"Clean city, bin-free city" was the identified sector vision.

Current waste dumping practices do not conform to the Supreme Court Solid Waste Management and Handling Rules. The development of a landfill site is a must. NMC should strive for 100% door-to-door waste collection. Strategies should be formulated and

implemented to ensure segregation of waste at source and waste composting at the microlevel. Waste to energy projects should also be encouraged to improve financial viability.

5.3.5 Roads and transport

"Safe and efficient traffic management" was the identified sector vision.

The present road network would need improvement to meet future demand. Road improvement should include road widening, rail over bridges (ROBs), and the planning of flyovers to minimize traffic congestion. Development of the outer ring road should be made a priority. NMC and other concerned authorities should adopt modern traffic management methods like GPRS systems and intelligent traffic management systems. Installing proper traffic signage, signals and road markings should also be a priority area.

5.3.6 Housing and slum upgradation

"Slum free city" was the identified sector vision.

Access to basic services by slum dwellers must be ensured. Slum rehabilitation program should be focused upon. More EWS/LIG housing should be provided by the government. Other facilities like public toilets, night shelters, destitute children's homes, beggars' homes, working women's hostels and marriage halls should also be provided.

6. STRATEGIES FOR ACHIEVING NAGPUR'S VISION

City Development Plan strategies may be defined as steps that the city needs to take to bridge the gap between its existing situation and where it wishes to reach (or the city vision). After defining the vision for the city and mission statements for various focus areas, close consultations were held with various action groups (identified in the visioning workshop). Various alternative strategies were identified by the groups. The final list of strategies was carefully drawn up and prioritised based on the degree of expected outcomes and target group preferences.

6.1 Steps leading to definition and prioritisation of strategies

Phase II started with focus group discussions with stakeholders to identify and define actions needed to achieve a particular mission statement. The discussions were held between the last week of February and first week of March. Simultaneously, a citizens' survey was conducted through an independent research agency to assess the performance of the Nagpur Municipal Corporation. The survey also aimed at assessing citizens' demand for various urban services.

NMC's credit strength was also assessed to determine its creditworthiness and to identify financial reforms required to sustain various investments proposed by NMC under JNNURM.

Phase II concluded with the third stakeholders' workshop conducted on 12th March 2006. At this workshop, the findings of all the above three activities were presented to NMC officials and stakeholders. Based on these, the stakeholders refined and prioritised the strategies and action plans for their respective groups. Individually, they also assigned priorities to investments across various sectors and projects, keeping in mind, the findings of the demand survey and credit strength assessment.

6.2 Sector-wise strategies

Strategies for each focus area have been discussed below in the order of priority, as assigned by the stakeholders. The order only indicates the level of significance of each strategy i.e. project or reform. It does not indicate the chronological order in which these strategies would be implemented.

6.2.1 Local economy

Nagpur city's population has been growing at a moderate pace compared to some of the other major cities in the country. The moderate rate of growth can be taken as a proxy to absence of a vibrant economic environment. This is despite Nagpur city and its surrounding regions having considerable economic potential both by way of human and natural resources. Agroprocessing, steel and allied industries, textiles, transportation and IT are some of the industries that can drive the economy of Nagpur and its surrounding regions. The MIHAN project is expected to trigger several economic activities in the region. The SEZ adjoining the MIHAN project has plans to accommodate those businesses and industries in which the city has competitive advantages. IT, textile and super-speciality health care centres will be set up in the proposed SEZ area. The MIHAN project along with the SEZ represent the core strengths of Nagpur city. It will be an important project that will market the economic

potential that resides in the city. The early fruition of this project will accelerate the pace of economic growth in the region.

The lack of adequate and appropriate employment opportunities in the city of Nagpur has been one of the key concerns for stakeholders. Nagpur though bestowed with several good quality higher education institutions has been unsuccessful in retaining its educated youth for employment. The presence of projects like MIHAN can absorb a significant portion of the technical and skilled manpower graduating from the numerous educational institutions in and around the city.

NMC hitherto has not been directly responsible for fostering economic development in the city. However in a service driven economic environment, good quality of urban life has become an important ingredient to attract investments. NMC thus has an important role to play in fostering an environment, which is conducive to business.

The existing organizational structure of NMC does not provide for a department, which deals with economic development. NMC should provide a single window for all business and commercial groups to deal with matters pertaining to various civic services and approvals. It is recommended that NMC should have an economic development cell, which will act as an interface for all issues raised by commercial and business groups.

NMC has to re-orient itself to meet the needs of its citizens. This will necessitate that NMC takes adequate steps to build capacity within its employees to perform effectively. This transformation is not possible without inducting qualified personnel into the ranks of the organization. NMC should be seen as a professional organization, which is very serious about the development of the city.

Nagpur has to compete with several other cities in the country to attract investors to set up operations in the city. It should be the aim of NMC to simplify the approval processes, which will allow industries to undertake investment activities in the city. It has been seen that in industries such as IT and health, Nagpur has considerable potential to grow. NMC in order to exploit the potential in these industries should offer them lower octroi duties to set up their operations.

NMC will have to incorporate the needs of these industries in the land use plan it prepares. There is a need to earmark land areas for specific industries like IT. NMC owns several vacant lands in prime locations in the city. This land should be exploited in partnerships with the private sector. IT parks and health care facilities should be developed on these lands.

Nagpur city has considerable potential for vertical expansion in the core city areas. The existing FSI limit according to industry sources is inadequate and unreasonable. Higher FSI will provide larger built-up areas for industrial, commercial and residential consumption.

6.2.2 Strategies to improve the core municipal services

Core municipal services refer to water supply, sewerage system, storm water drainage and solid waste management.

Water supply system

The suggested mission statement for water supply services is "Water for all and 24 x 7 supplies with focus on safety, equity, reliability".

Demand projections suggest that with the current water supply schemes, Nagpur is expected to face a water deficit situation by 2011. Thus, additional schemes need to be designed for sourcing more surface water for the city. The surface water should be supplemented with ground water. To maintain the ground water levels, rainwater harvesting should be made compulsory for all new building projects. Natural water bodies like nallahs must be conserved.

There is a strong need to reduce transmission and distribution losses. To this end, NMC should refurbish the old distribution system, prepare an asset inventory and map the water supply systems for effective monitoring. It should conduct a leak detection study and reduce unaccounted-for-water levels. NMC should identify illegal water connections and discourage public stand posts (PSP). The slum areas have several public stand posts (PSP) located close to households with water connections. Such PSPs must be removed.

NMC should conduct regular checks to verify the quality of water being supplied. Pollution of water from nearby sewerage lines is always possible. Such potential and existing polluting sources need to be checked.

Coverage must be gradually increased to 100% and all households should be provided with metered connections. Currently, NMC supplies water for only four hours every day on average. As new water sourcing schemes are implemented, this should be gradually increased to 24 hours. At the same time, to minimise wastage of water, metering should be introduced for all the water connections. Strict quality checks should periodically be done for the meters. Tariffs should be designed to discourage wastage; NMC should introduce volumetric billing.

To ensure the financial sustainability of the water supply system, NMC should control its operational expenses. It should conduct an energy audit, which accounts for the bulk of its operational expenses.

Sewerage and storm water drainage system

The mission statement for sewerage and storm water drainage system has been defined as "100% coverage of sewerage collection and treatment and strengthening and rejuvenation of natural drainage system".

NMC must extend the sewerage system to the entire city and provide individual connections to all households/constructed units. The proposed sewerage system must ensure that no sewage is disposed into water bodies in and outside the city. It should decentralise the system of operations for effective service delivery and ensure that the location of sewerage treatment plants (STPs) is in harmony with the river and lakes conservation plan and that the benefits are maximised.

To provide universal access to clean and affordable sanitation facilities at public places, NMC should improve access to sanitary facilities for the urban poor and slum dwellers on a priority basis. Open defecation practices should end completely. NMC should encourage the

pay and use category of public conveniences through public private partnership arrangements and community involvement in the maintenance of the same.

NMC must focus on the rejuvenation of the Nag and Pilli Rivers, nallah canalization and the consequent strengthening of the natural drainage system. Lake rejuvenation must be included in the development process as a priority area. All roads must have storm water drains to prevent flooding during peak periods.

Solid waste management

The suggested mission statement for SWM is "Clean city and bin-free city".

NMC should make serious attempts to ensure 100% segregation at source. It should further encourage citizen participation in source segregation through awareness campaigns or introduction of penalty fees. It may outsource the communication campaign to NGOs/environmental organizations. Campaigns to raise awareness of better SWM practices should be initiated among the urban poor and slum dwellers. NMC should institutionalize ragpickers' associations and integrate them into the system responsible for primary collection activities.

To end the current waste dumping practices, development of a landfill site is a must. At the same time, decentralised waste to energy projects should also be encouraged to improve the financial viability of the system.

6.2.3 Roads and public transport

The city's transport network should be made complete in terms of hierarchy and accessibility for efficient movement of traffic. The plans for the same are already in place for Nagpur. The city has an Inner Ring Road (almost complete) and an Outer Ring Road planned. There are some missing links within the Ring Road (like Kalamna ROB) and also in some parts of the development plan roads. These links need to be completed on a priority basis for achieving full efficiency.

In order to control the growth of private modes in the traffic stream, the city will need to have an efficient public transport system. It needs to be appreciated that the current average trip length per person is comparatively low; this calls for a high frequency (not necessarily very high capacity) transport system for the city. The development of a public transport system is one of the major recommendations made in the Draft Urban Transport Policy.

Considering current and proposed trip lengths and likely volumes on the links, it would be ideal to develop a mini-bus based transport system with the buses using eco-friendly fuels like liquid petroleum gas. (Currently, the CNG supply to Nagpur is not substantial, but securing more CNG should not be difficult in light of the experiences of other cities.)

MSRTC has depot and maintenance facilities for its buses, but these may be inadequate to accommodate a substantial increase in the fleet size. It will not be difficult for NMC to find alternate locations for new depots. Also, NMC should carefully examine whether it could fully take over the operation license from MSRTC, especially since MSRTC has expressed its

willingness to terminate its service within the city. If NMC can take over the facility of city bus operations, it can even explore the possibility of private participation in the operations.

For better traffic management, areas like the railway station and Itwari should be treated as special areas as their traffic characteristics are slightly different (mainly in terms of the mix of vehicles and pedestrians). Traffic management schemes for these could be independently worked out. There is also a need to undertake junction improvement measures. For instance, there are many cases where the inefficient design of a junction reduces the efficiency of the network. The inefficiency could be in the form of lane provision at the approaches, inefficient location of signal poles, inefficient geometry (visibility, etc.), inappropriate type selection, insufficient facilities for pedestrian crossings, etc.

In Nagpur, signals operate on fixed time plans. This could be varied and even demand responsive signals could be introduced. Also, the aspects of the signals could be changed to LED signal heads using lower power consumption. Ultimately, the whole system could be linked up through either corridor-based or area-based software that could automatically control the signals.

Signs and markings could be updated to make even the first time user of the network comfortable in following the directions. There is also a need to provide bus bays. NMC should undertake a bus shelter development programme on a priority basis.

Parking is becoming a grave issue in the city. NMC already has plans for developing some parking plazas. These should also get priority in future development.

Pedestrian facilities such as footpaths, provision of railings and provision of pedestrian refuge islands at medians need to improved. As far as possible, the design of these facilities should be such that usage by physically challenged sections of society is easy. Where possible pedestrian grade separations like subways should be provided. Also, the provision of pelican signals at the large crossings should be examined.

There are certain corridors that have been widened recently in these corridors; the traffic is able to move at great speeds endangering the safety of users. Traffic-calming measures should be adopted in these stretches to prevent speeding.

In order to instil the basic principles of traffic behaviour in the young population, a scheme for traffic education should be implemented.

To control the vehicular movement of goods within the city, transport plazas should be developed on the city's outskirts along the major entry routes into the city. These should have facilities like vehicular parking and warehousing facilities.

Road improvement is another area on which NMC needs to focus. This would involve the following:

- Better design of roads involving adoption of better design standards in terms of horizontal and vertical geometry, provision of medians, better drainage facilities, etc.
- Roads, which have bottlenecks by way of encroachment or presence of utility poles, should be developed to the fullest extent so that the entire capacity is available to the users.

Utilities necessarily have to follow the road path in urban areas. There should be adequate
provision for installing the same. This will facilitate maintenance of the utilities without
much discomfort to the users. This could be in terms of providing interlocking tiles on the
widened portions under which the utilities could be located. In such cases, when required,
the blocks could be removed for maintenance and could be replaced without any problem.

A techno-economic feasibility study for the proposed Mass Rapid Transit System (MRTS) was conducted by L&T Ramboll Consulting Engineers Ltd. NMC should examine the proposal further for attracting private investments building a MRTS in a phased manner and at an appropriate time.

6.2.4 Education and medical facilities

For the provision of medical and educational infrastructure, NMC's role is limited to primary level services. To promote higher-level education and medical facilities, NMC must provide a conducive environment for other government agencies and private developers in the form of support infrastructure, incentives, etc.

Future steps towards improvement in health care facilities should be based on certain principles. There needs to be an emphasis on participatory planning in medical care, quality health care and client satisfaction and preventive health care measures.

NMC should target the eradication of preventable diseases by 2011. This may be helped by the supply of good quality drinking water and sanitation facilities and strict control and supervision of hotels and roadside food vendors. A resolution of the mosquito menace will eradicate the vectors. Total vaccination of the population as per WHO schedules should also be completed by 2011.

To ensure quality medical care to the under-privileged, NMC should make plans for involving private doctors by providing them with free space in existing Corporation dispensaries.

To achieve its mission of 'Making Nagpur a medical services hub', NMC should encourage and incentivise the setting up of multi-speciality hospitals in the form of access to affordable land, exemption of octroi on equipment and medicine, subsidy on water rates and taxes, etc. The city should have a world-class convention centre for conducting major medical conferences and providing health care to the population.

NMC may encourage public private partnership in primary education for maintenance of buildings and infrastructure. It should take strong steps to ensure the quality of education in schools through standardization and performance incentives.

6.2.5 Slums and urban poor

A "Slum free city" was identified as the sector vision by the 'Slum and urban poor' group. As per the stakeholders, access to basic services by slum dwellers must be ensured and a slum rehabilitation program should be focused upon. More EWS/LIG housing should be provided by the government. Other facilities like public toilets, night shelters, destitute children homes, beggars' homes, working women's hostels and marriage halls should also be provided.

The following strategies are proposed to address the issues of urban poor and slum development in Nagpur.

Since Nagpur will continue to grow at a fast pace, there is need to strengthen the urban planning process and evolve citywide strategies to provide alternatives to slum formation. Making land available to the poor at affordable prices and ensuring the provision of housing, urban infrastructure, and transport services on the fringes of the cities, can provide alternatives that would restrict the formation of new slums. Simple strategies like reservation of land for EWS housing can ensure the creation of sufficient and affordable housing stock in the city.

Perhaps the most important change needed in managing Nagpur's slums is fostering a collaborative partnership between local authorities and communities, with strong support from the government. Local authorities are the city planners, financiers, and providers of infrastructure services. Their performance depends on good governance at the city level involving communities living in informal settlements. This implies working with the urban poor as partners in the city development process, and not seeing them as obstacles, as is too often the case today. Community organizations can provide a voice for the urban poor and ensure that their interests are met in slum upgradation programmes and urban planning. Federations of slum dwellers have access to unique information on informal settlements, information that is central to successful upgrading. These federations should be involved as equal partners from the beginning of the planning processes. Local authorities should support community-led initiatives financially and treat community organizations as equal partners.

Strategies for improving security of tenure are central to the improvement of the lives of slum dwellers and land use in urban areas. This may require reform of tenure and land-use legislation, coupled with new legislation to prevent forced eviction. In enhancing access to land, it must be ensured that women have equal access to land tenure and title rights. Improvement of security of tenure requires a high degree of tailoring to local needs as the ownership of slum lands varies radically in the slum settlements of Nagpur. It would be in the interests of the slum dwellers to ensure that a single agency works on ensuring tenure rights, irrespective of the owners of the slum sites. It is also suggested that such decisions should be made by the slum dwellers themselves. For this, their organizations should be recognized as critical partners on par with local authorities. This could be facilitated by NGOs, CBOs and other networks of urban poor.

For the implementation of SRA schemes, it is essential to create an updated database on the conditions of slum settlements, preferably through GIS and maintain this updated data. Wherever possible, community organizations should be supported and allowed to play an active role in preparing and executing plans for slum upgradation/redevelopment under SRA. A number of slums in the city have minimal infrastructure while huge investments have been made in some other select pockets. Hence it is critical to prioritize slums to be considered under SRA schemes through consultation and public opinion. Information about the scheme should be transparent and communicated through common platforms to ensure participation from communities as well. While housing quality is a concern, this can be addressed by training a committee of local people to take up construction contracts or monitor construction quality.

While planning for redevelopment under SRA, NMC should focus on infrastructure such as sewers, piped water, and electricity grids. Investments in improved sanitation should receive high priority to improve the quality of life and reduce the high burden of oral-faecal diseases in informal settlements caused by widespread open defecation.

Where SRA is not viable and space constraints are high, improvements in the provision of basic urban services can be taken up. Low-cost communal toilet blocks and shared water posts have been used successfully in other Indian cities. Effective hygiene education and awareness-building programs are essential to create demand for sanitation and to ensure its adequate use by all household members. Other investments required as part of slum upgradation include investment in storm water drainage, community facilities, local markets, and street lighting. Health services require investments as well. As mentioned earlier, nutrition interventions for both the general population and vulnerable groups will reduce morbidity and mortality among the urban poor. Clinics/health posts need to be more accessible, located where the needs are the strongest, and open during hours that can accommodate the schedules of the working poor. Functioning of balwadis must be improved and, if required, managed with the local community groups.

Good infrastructure attracts domestic and foreign investment, which is necessary for large-scale job creation. It is essential to see how this can generate employment for the local population. Equally important are measures to support the informal sector, for most of the urban poor in Nagpur work in low-paid, low-productivity and low-security jobs. Corrective measures would include providing training and assistance to small enterprises to upgrade their skills and increase their access to productive resources and market opportunities. In this process, it is also essential to consider how the traditional skills/arts of local people can be retained. Further, sufficient employment opportunities for women in slums must be devised; this will help in increasing household income and ensuring better quality of life.

Sound urban planning and standards are also central to averting or mitigating the impact of floods, landslides and storms. This is particularly true in case of the slum population which is the most vulnerable. It is essential to create inbuilt disaster prevention and management mechanisms for them to successfully grapple with both natural and man-made disasters. This could be a part of the city disaster management plan as well.

Access to credit mechanisms is of particular importance; the poor can incrementally invest in housing, if they have adequate security of tenure, and this can become an important means of asset accumulation.

6.2.6 Urban environment

For retaining the healthy status of Nagpur's urban environment, several planning and conservation initiatives need to be taken. Nagpur has been known as a "clean and green city." It is imperative to preserve this image.

This could be achieved through the proper zoning of activities, provision for sufficient breathing space in new development and adoption of proper landscape design practices at the city level. It is also important to promote conservation in the region consciously. NMC can draw lessons from National Biodiversity Strategy and Action Plan (Supported by the Ministry of Environment and Forests - GOI and the United Nations Development Programme).

Biodiversity corridors should be created in the form of continuous stretches. There should be a clear-cut strategy to conserve and protect the physical environment, including rivers and hills in and around Nagpur city. It is important to weigh the environmental impact of the new programs or development schemes.

Lately, a large number of unauthorized layouts have come up in the city, near to the city's fringes or in fringe areas. It is important to devise a plan, which can check the growth of these unauthorized developments, especially within the city's precincts.

To ensure sustainable development with optimum resource utilization, it may be necessary to develop a regional plan that envisages a balanced relationship between the main city and surrounding regions. For maintenance of open space, the planning authority at the regional level should prepare a detailed inventory of the space and explore its probable multiple uses or forms for recreation and visual pleasure. Possibilities to include the private sector for maintenance of these areas should be explored.

For water body conservation and rejuvenation, proper attention should be given to existing lakes and water bodies in the city. A comprehensive water body restoration or revival program in the region is of utmost importance. For example, the Nag River originates in Nagpur itself. It is important to draw up plans for the regeneration of the extinct River Nag and address issues related to its pollution through city sewage and other wastes. Efforts/schemes should be designed to check the diversion of sewage flow into city lakes through appropriately located sewage treatment plants. Considering the issues related to the demand for treating large amounts of sewage generated in Nagpur city, decentralized sewage treatment is recommended.

Lake conservation should also explore the possibilities of reviving lakes as water sources or points of interest in the city. Attempts should be made to discover the tourism potential of these areas and turn them into attractive visiting points for tourists.

Periodic monitoring and review is essential to check air quality. To create awareness amongst user groups, the status of air pollution may be revealed through display systems instituted at major locations in the cities. The issue of keeping air pollution levels low is also linked to the availability of an appropriate public transport system in the city. In the old city areas, it may be necessary to review the typologies of existing public transport systems and suggest cleaner fuels or better alternatives for transport. It is essential to integrate landscape design principles while planning for major transportation corridors in the city. Suitable plantations or green cover should be provided on major routes to supplement better air quality.

6.2.7 Land use and housing

The stakeholders have defined this mission statement as "Modern land management practices that promote economic development in an environmentally sustainable manner".

The most important area of improvement for a rapidly growing city is its inner city or core areas. Efforts should be made to decongest the core areas through selective relocation of commercial and trading activities. NMC would need to identify land in the peripheral areas and provide space for re-location. Building regulation policies should also be revised to

encourage decongestion of the core areas through building norms, FSI norms & incentives, and parking norms.

Nagpur's citizens take pride in its well-preserved natural environment. NMC must discourage development in critical, ecologically sensitive areas. Critical locations with respect to environmental sensitivity need to be identified and demarcated by the Town Planning Department. Special Development Control Rules (DCR) should be made applicable to these areas to restrict any encroachments and unauthorised developments. Private land owners with a large mass of green space within the municipal limits like PKV, NEERI and VNIT must be involved in the planning process.

Based on the compatibility of land uses, detailed studies should be carried out to identify corridors where densification is possible. Organically, such development can be seen along the Wardha Road and Amravati Road. NMC must calculate the carrying capacity of these and other areas on the basis of certain indicators, for example water source, eco-sensitivity, cultural or heritage significance. In selected areas, specific nodes should be identified along these routes and developed as high density commercial and entertainment centres; the concept of paid FSI must also be explored. This would also be in line with Nagpur's vision to develop as an IT and educational hub. Such development must be closely linked with the public transportation routes.

NMC and NIT must facilitate housing for the slum population and transit shelters for the EWS/ LIG migrant population. It should encourage builders and developers to develop mass housing under incentives. Considering the low demand for housing at present, in-situ development should be taken up for plots with low commercial prospects.

Peripheral area development needs focus and integration with transportation networks through coordinated efforts from NMC and NIT. Potential development areas in the periphery need to be linked through an efficient arterial structure within/outside the city. As the economy grows and developmental activity intensifies, these peripheral areas would provide alternatives for decongesting the core. NMC shall undertake exercises to widen the connecting roads and provide the missing links. In this context, NMC should also make provision for land for transportation corridors, transportation hubs and network to provide safe, efficient and affordable mobility.

Assessment of the institutional structure suggests that following the Government Order of the Govt. of Maharashtra dated 27th February 2001, NIT's role in land management within the municipal limits has decreased significantly. Its ability to implement metropolitan schemes is also limited considering its low financial base and lack of legislative support for land pooling schemes, etc. In this context, NMC should fully take over land planning and management within its limits. For integrated fringe area development, a Metropolitan Planning Committee should be constituted for the Nagpur metropolitan region. This agency should be well equipped with necessary capacity, in terms of both skills and supporting legislations, for effective planning and management. The efforts of this agency must be systematically coordinated with those of NMC.

6.2.8 Culture and heritage

The stakeholders have defined the mission statement for this action area as "Nagpur: Gateway to the tiger country". The stakeholders feel that Nagpur should not only act as an

entry point to the Vidarbha region, which holds great tourism potential, but also be seen as a tourism destination itself.

Firstly, NMC should prepare a heritage conservation plan. This should be well integrated with various other actions plans for land use, transportation, environment, etc. Preparation of such a plan would include listing and documentation of artefacts, structures, buildings, etc. and updation of the list periodically. Based on the criteria defined by the heritage committee, precincts and heritage zones would be identified and planned for. To retain the character of these heritage zones and precincts, separate byelaws and regulations should be prepared for each of them. These would need to be integrated in the city's overall development plan with respect to zoning and building regulations.

The plan may be supported by a heritage conservation policy for the city. The policy should cover aspects of documentation (status and condition of the heritage structures), strategy plan (what needs to be done), and implementation plan (how it should be done).

To ensure the successful implementation of this plan, it is important to create a sense of ownership of the heritage structures among various stakeholders. There should be increased interaction with the heritage structure owners. This should be facilitated by NMC. NMC should also create awareness and organize heritage walks and tours. For financial and technical capacity support, it should seek out private entrepreneurs.

There is a need to create a separate fund for these conservation activities from the budgetary allocations of NMC. NMC also needs to build its capacity through the training of employees. The Central Public Works Department (CPWD) and Public Works Department (PWD) are in charge of the maintenance of a large number of heritage buildings in Nagpur. A separate conservation cell needs to be created in these organizations also.

Tourism may be developed on themes of heritage, wildlife, religion, health or education. Adequate facilities should be provided to tourists in terms of affordable accommodation, information and booking services, and inter-city and intra-city transport.

6.3 Reform agenda for Nagpur

The aim of JNNURM is to create "economically productive, efficient, equitable and responsive cities" by focusing on a) improving and augmenting civic, social and economic infrastructure, b) ensuring basic services for the poor including security of tenure at affordable prices, c) initiating wide ranging urban sector reforms, primarily aiming to eliminate legal, institutional and financial constraints that are impeding investments in urban infrastructure and services, and d) strengthening municipal governments and their functioning in accordance with the provisions of 74th Constitutional Amendment Act, 1992.

Though one of the main aims of JNNURM is to finance the infrastructure investments identified as part CDP, the larger objective of the Mission is towards initiating the much needed reforms in ULBs. The Mission has identified certain mandatory and optional reforms to be undertaken during the mission period for the ULB to be eligible for funding; the reforms are at the level of state government and the ULB. This section deals with the ULB level reforms and specific items are identified under each reform. The timelines for

implementation are indicated and the detailed action plans and the status of these reforms are presented in this section.

6.3.1 Mandatory reforms undertaken by NMC

JNNURM specifies a set of mandatory reforms to be undertaken by ULBs. These reforms are as under:

- Adoption of modern accrual based double entry system of accounting
- Introduction of a system of e-Governance
- Reform of property tax with GIS, so that it becomes a major source of revenue and arrangement for its implementation so that collection efficiency reaches 85 per cent within the next seven years
- Levy of reasonable user charges with the objective that full cost of operation and maintenance is collected within the next five years
- Internal earmarking within local body, budgets for basic services to the urban poor.
- Provision of basic services to Urban Poor

The status of reforms and the strategies planned by NMC for implementing the above reforms are as under.

1. Adoption of modern accrual based double entry system of accounting

NMC has achieved most of the desired outcomes of JNNURM with respect to accounting reform in the first year itself (2005-06). In the first year, NMC had a double entry accrual based accounting system in operation, parallel to the single entry system. From 1st April, 2006, the double entry system would be in operation independently. At the end of the financial year 2005-06, NMC has been able to generate a provisional balance sheet and income-expenditure statement. NMC had its finances rated by a credit rating agency in 2005-06.

One of the commitments that NMC would have to make under JNNURM would be the preparation of an outcome budget. The aim of the outcome budget is to ensure the proper and verifiable use of JNNURM grants and to bring about accountability among various departments to deliver in stipulated time periods. It is a performance measurement tool designed to help service delivery, decision-making, and evaluation of project implementation and identification of areas for possible intervention. It is important to convert outlays into physical outcomes with monitorable monthly/quarterly/half-yearly targets to improve the quality and the pace of implementation of city developmental projects.

An important component of the action plan would be to build capacity of the accounting staff. NMC has visualised adequate training support to all relevant personnel so that the transition from a single entry system to a double entry system is smooth. The training would involve various elements of financial management from the accounting viewpoint as well as an understanding of accounting standards and policies. It will also aim to enable the accounting personnel to support the decision-making process through utilisation of various financial tools and reports generated by the accounting system.

Accounting Reforms	2005- 06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Provisional OBS	✓						
Adoption of provisional OBS		✓					
Finalisation of OBS			✓				
Preparation of outcome budget Complete re-vamp of the Public Financial Management (PFM) cycle which includes internal controls			√				
Valuation of assets and liabilities		✓					
Full migration to double-entry accounting system		✓					
Production of financial statements (income-expenditure accounts and balance sheet)	✓						
Credit rating of ULB/parastatal	✓						
Budgetary Reform		✓	✓				
Introduction of ERP Software for accounting		✓	✓	✓			
Capacity building of all NMC staff		✓	✓				

2. Introduction of system of e-Governance

NMC has taken several initiatives to implement e-Governance systems and procedures with the intention of improving service delivery and bringing about transparency in its functioning. The key initiatives under this area of reform are as under.

Octroi computerisation

NMC started the computerization of the octroi department in 1998. This allowed computer receipts to be issued to customers. Under the reform agenda it is proposed to connect all the nakas, through dial-up connectivity, to the central octroi head office and civil lines head office of NMC. NMC has also taken up the computerization of the transit pass (rahdari) operations. This will help NMC to facilitate the passage of heavy vehicles through the city in minimum time. This will also increase the revenues of NMC and reduce malpractices on the part of transporters.

Property Tax and Water Billing Systems

NMC has already computerized its property tax and water billing systems. Under the reform agenda NMC has proposed that all its zonal offices and the Citizens Facilitation Centres will be connected through WAN and LAN.

Birth and death registration system

Earlier birth and death certificates were being issued and registration was being done from the Central Facilitation Centre at Civil Lines office. Now the certificates will be issued from zonal offices also.

Web portal work

NMC is developing a real time enterprise web portal. Various services will be provided to citizens through this web portal.

Biometrics attendance system

This system is being developed for time and attendance tracking of employees. The first phase of the work has been completed at the Civil Lines office. Soon, it will be extended to all the zonal offices. The information of attendance of employees will be integrated with the payroll software and salaries of the employees will be based on this system.

Interactive voice response system (IVRS)

This system will provide various services to citizens through telephone, mobiles, SMS and web. The service will answer various citizen enquiries regarding property tax, water bills, various other dues, complaint redressal, etc.

Municipal infrastructure information system (MIIS)

This is a GIS based system. Up to date information on municipal infrastructure such as roads, street lights and landmarks, and other information will be provided through this system. The administration will receive the necessary information on its desktop, which will help it to provide better solutions.

Citizen facilitation centres

NMC has commissioned a Citizen Facilitation Centre at the Civil Lines office. All the computerized services will be provided through this CFC. It is also proposed to construct CFCs at all the zonal offices of NMC. Some of the zonal offices are already providing some of these services.

Kev	Refo	rm Mi	lestones
Nev	Neio		iestones

E-governance	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Geographic Information System(GIS)	✓	✓					
IVRS (Interactive Voice Response System)	✓	✓					
Municipal Area Networking (MAN)	✓	✓					
Kiosk	✓	✓					
Document Management System (Document Scanning	✓	✓					
Web Portal of N.M.C.	✓	✓					

3. Property tax reform

NMC currently has a demand-based property tax collection system. The method of valuation adopted is the Rateable Value System. The existing system is plagued with several inefficiencies. Only 52% of the demand raised is being collected by NMC in the case of residential properties and 27% in the case of non-residential properties.

NMC has committed to achieve 85% collection efficiency by the end of 2012. To realise this goal, tax collection needs to be carried out as a commercial function within NMC. The Revenue Department needs to function as a commercial function and be supervised with the same orientation. NMC plans to take the following steps, which will improve collection efficiencies and also improve the average revenue yield per property. The main components of the action plan are as follows:

Conducting property tax reassessment

NMC had conducted its last property tax reassessment in 2000. NMC is empowered to reassess property values every five years. NMC has begun the process of reassessment, though belatedly, and expects that the new system of assessment, which will be applicable

from 2006-07 onwards, will increase property tax yield by 20%. The reassessment exercise is also expected to bring about 50,000 un-registered properties under the property tax net and update the development that has occurred on about 50,000 properties.

Carry out internal restructuring

NMC will review the work-flow at the Property Tax Department and suggest improvements that will help in increasing productivity and making the municipal officials accountable for the tasks assigned.

Leverage information technology

Traditionally, any review of property tax management has been constrained by data. Information was not available in a form that facilitates meaningful review (for example, high value defaulters, potential versus actual collection for each revenue officer). Often such information was made available only for the purposes of review by the revenue officers themselves. The information was also not current. A computerised database provides a strong starting point for property tax management. External review and monitoring is easily possible since this information is maintained independently and updated regularly. Moreover, it is also easily accessible. NMC's approach will be to leverage this potential for regular review and monitoring.

Use communications and convenience to improve compliance

A formula based Self Assessment System (SAS) shifts the responsibility for assessment and payment to the citizens. Thus the degree of collection depends mainly on how the citizens fulfil this responsibility. An effective communication strategy is necessary to ensure that citizens understand this responsibility and fulfil it in a timely manner. Similarly, the convenience with which citizens are able to submit their forms and pay their dues will also determine levels of compliance.

Explore outsourcing opportunities

An independent computerised database also opens up several outsourcing opportunities such as tracking defaulters, raising demand notices after the due date, etc. NMC would explore possibilities of outsourcing its collections of property tax.

Reorient the Revenue Department

With SAS and a computerised database, record keeping, billing and collection, there will be a substantial change in the role of officers in the Tax Department. This change would warrant reorientation of the officers through training and adapting them into a new work environment. Also since compliance is by citizens themselves, the enforcement responsibilities intensify only after the due date. NMC has planned actions in this regard to address the training and capacity building needs of its staff.

Train the employees and use incentive linked targets

A commercial approach to tax management also calls for clear responsibilities at the individual level in the Revenue Department. NMC's approach will be to explore how a system of targets, responsibilities and incentives can be designed within a local body context.

Levy penal interest for delayed payments

Currently, there is no penal interest charged on delayed property tax payments. Thus there is no dis-incentive for not making payments on time. In 2005-06, of the Rs.140 crores of demand raised, about Rs.80 crores pertained to earlier years. NMC has proposed a penal

interest of 12% per annum on delayed interest payments. In the current scenario, the bulk of property tax collections occur in the last month of the financial year thus putting undue stress on the Property Tax Department. For taxpayers who are willing to pay their tax well before time, a rebate of 6% on the property tax is also proposed.

The timeline planning and key milestones under property tax reform are as under:

Accounting Reforms	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Extension of property tax regime to all properties	✓	✓	✓				
Migration to Self-Assessment System of Property			-	•	•	-	
Taxation							
		1					
 Setting up a committee/team to draft/amend legislation 							
ii. Stakeholder consultations	✓	✓					
iii. Preparation of Draft Resolution			✓				
iv. Approval of the General Body			✓				
v. Approval by Government			✓				
vi. Notification			✓				
viii Implementation				✓			
Setting up a non-discretionary method for determination]						
of property tax							
	1	√					
 Setting up a committee/team to draft/amend legislation 	·						
ii. Stakeholder consultations		✓					
iii. Implementation			✓				
Use of GIS-based property tax system	ļ		ļ			ļ	
Selection of appropriate consultant		✓					
beleetion of appropriate consultant						1	
Preparation of digital property maps for municipality		✓	✓				
Full migration to GIS system				✓			
Tun ingration to Old System							
Next revision of guidance value		✓					
Establish taxpayer education programme				•	•		•
Local camps for clarification of doubts and assistance in		/					
filling out forms		•					
Satting up a viabalta for measure tay isovaalfaga ata			✓				
Setting up a website for property tax issues/faqs, etc. Establish dispute resolution mechanism	/						
Establish dispute resolution mechanism	•						
Rewarding and acknowledging honest and prompt		✓					
taxpayers		•					
Achievement of 85% Collection Ratio							./
Achievement of 85% Collection Ratio	1		1	J			V

4. Levy of reasonable user charges

It is the objective of JNNURM that NMC be able to recover 100% of the O&M expenditure incurred by it. The recovery of user charges would be possible if it was accompanied by improvements in service delivery. NMC has thus made improvement in service, as well as levy and collection of user charges, as one of its core reform agenda. The actions/strategies are as under:

Water supply

It is NMC's ultimate objective to provide 24x7 water supply to the citizens of Nagpur. Currently, on average, water is supplied for 2-4 hours daily. The increase in water supply will be made possible by source augmentation and reduction of transmission and distribution losses.

The issues with water supply are related to the percentage of non-revenue water that is as high as 38% and recovery on the water account. NMC plans to bring down UFW to 25% by

2009-10. NMC recovers about 62% of its O&M expenditure on water supply. NMC intends to achieve full cost recovery on this account by the end of seven years.

In order to achieve full cost recovery as well as reduction of UFW NMC has proposed a mix of projects and actions in this regard.

The starting point for efficiency or productivity improvement was the leak detection, energy and water audit studies conducted by NMC. These studies identified areas that NMC would need to concentrate on to reduce supply losses and improve efficiency. The actions (projects) recommended under these studies have been proposed for funding under JNNURM.

The projects proposed under energy audit study would reduce losses due to old pumping equipment by replacing them. The projects are also of the category of energy optimisation through certain technical modifications that would rationalise the distribution system and also reduce static and frictional head losses. This project itself would translate into annual saving of Rs. 4.75 crores per annum in energy costs.

The projects proposed under water audit recommendations aim at steps for bringing down the Unaccounted for Water (UFW) from the current level of 38% to 25%. The measures under these projects are primarily of the nature of conservation, installation of flow meters and replacing faulty consumer water meters, rehabilitation of service connections, improving meter reading and billing systems. This project also aims at replacing public stand post connections in slum areas with individual household connections. These projects would strengthen the billing and collection system of NMC and NMC would be in a position to implement a transparent system that will charge consumers for water on the basis of their water usage. This project would also demarcate zones and have bulk metering as a means for cross-checking the amount of water consumed and billed within that zone, thereby bringing in accountability on the part of the zonal in-charge for billing the water consumed in a zone. This system in future can accommodate service contracts with the private sector in water supply distribution, billing and collection for the zones. NMC could take the responsibility for bulk water transmission and reduce its establishment expenditure accordingly.

Water Sector Reforms	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Reduction UFW in distribution			•	•		•	
Strengthening of tertiary network	✓	✓	✓	✓			
		,	,				
Implementation of AMR (Automated Meter Reading)	✓	✓	~	✓			
System with computerisation of water billing							
I the Co temporary	1		1	1			
Installation of flow meter for each ESR to bring	•	ľ	ľ	ľ			
accountability in revenue recovery against water supply							
Reduction of UFW in raw water							
Laying of pipeline to transport raw water, Pench-IV			✓	✓	✓		
Installation of flow meter			✓	✓	✓		
Improvement in Energy Efficiency in Pumping Station							
Replacement or up-gradation of pumping machinery for			1				
better energy efficiency			•				
Improvement in treatement plant efficiency			✓				
Monitoring system		✓					
Increase in coverage							
Expansion / up-gradation of water distribution network to		,	,				
newly developed and un-connected area.		_	~				
Provide 24X7 Water Supply to Nagpur City							
Develop the Dharampeth zone of NMC out of total 10 zones							
in Nagpur for 24X7 water supply as pilot zone		✓	✓	✓	✓	✓	✓
Implement the 24 x 7 to other zones in phases with			./		-	./	-
experiences in pilot zone.		•	•	•	•	•	•
Tariff Revision							
Tariff based on actual O&M cost with debt burden. Tariff							
slab shall encourage for water conservation i.e.high tariff for		✓	✓				
higher consumption							
Billing & Collection (Recovery)		1	1				
Dining & Conceion (Necovery)		•	·	l			

NMC as part of productivity improvements has proposed a Slum Policy for Water Supply, which will curb the technical and commercial water losses in the system. In the slums of Nagpur, about 170 MLD of water is being supplied. Per capita water consumption beyond 80 lpcd in slums is difficult given the small size of the dwellings and lifestyle habits. For a slum population of 8 lakhs, typically around 64 MLD of water should be supplied. In the present scenario, about 170 MLD is being supplied, but the levels of wastage are very high on account of the existence of numerous public stand posts (PSPs). NMC plans to remove all the PSPs and provide individual connections to every slum. NMC can thus meet the requirement of the slum dwellers by supplying about 70 MLD (6 MLD in excess of the requirement of 64 MLD) and use the remaining 100 MLD to supply to other water deficit areas of the city.

The project proposed under the leak detection study aims at reducing the overall cost of raw water to NMC by installing flow meters at the raw water intake source. The Irrigation Department manages this intake point and it charges NMC as per a formula developed through empirical means. The formula currently overcharges NMC by about Rs. 1.65 crores per annum. The flow meter is aimed at accurately measuring the actual water taken by NMC, rather than approximating the charges.

In addition, NMC has also proposed projects for strengthening the water supply system and augmenting water supply. Under strengthening of water supply system NMC has proposed modifications and additions in the system that would help NMC improve its water supply coverage from the current level of 85% to 100%. It would also help NMC completely phase

out tanker water supply and replace the same with treated piped water. This project is also aimed at improving service to the citizens.

The water augmentation project is aimed at increasing the quantity of water supply for the city to accommodate the projected population increase. The project has an optimal design that will minimise bulk water transmission losses by transporting water through pipelines rather than open canals.

Strategically, the above measures are aimed at improving water supply coverage, improving service levels, reducing losses, implementing metering and billing systems and bringing in accountability from the NMC officials involved in water supply and distribution. These measures set the base for NMC to increase its water connections and charge users through transparent means. Improved service levels and accountability from NMC officials will tend to improve collection efficiency. In this context it is also pertinent to note that the citizens' survey conducted by NMC has indicated that 72% of the citizens are ready to pay about 10-20% more if service levels are improved. The citizens are also ready to accept metered water supply (at present there are 1,44,000 metered connections) assuming that service levels improve. While designing for augmentation, future demand due to MIHAN project is also taken into account.

Sewerage

In the case of sewerage, NMC generates a small surplus with regard to expenses incurred and income earned. However, the existing sewerage system in the city of Nagpur is inadequate. The stakeholders have identified the lack of a proper sewerage system as an area of concern. NMC has plans to invest Rs.515 crores during the tenure of JNNURM to increase coverage and improve service levels. It has been proposed that in order to increase revenues from this stream, the sewerage tax which is collected as part of the property tax, will be hiked to meet the increased expenditure of operating and maintaining the new system.

Solid waste management

In the case of solid waste management, NMC plans to recover user charges only for primary collection. NMC currently incurs a revenue expenditure of about Rs.35 crores on solid waste management while there is no direct revenue generated under this head. NMC incurs an expenditure of Rs.5.5 per household for door-to-door collection of solid waste. NMC plans to gradually recover this charge from every household. The revenues realised will be less than Rs.3 crores. This is insufficient to cover the expenses incurred by the solid waste department. NMC has taken a stand that solid waste collection is one of the basic duties it performs and hence it does not intend to attain 100% cost recovery for this service provided. It plans to subsidise this service through surplus generated from other sources.

5. Services for urban poor

About 37.5% of households in Nagpur are living in slums. It is estimated that about 50% of these households may not have access to municipal water supply and sanitation in their premises. In order to provide equitable services to the urban poor various initiatives have been proposed by NMC. The same are as under.

The strategies under land use planning contemplate housing for slum population and transit shelters for EWS/LIG migrant population. In that context specific actions would be taken while preparing the development plan for Nagpur that is due in 2010 for including a provision for such housing in mass housing projects.

The water supply project proposed by NMC for funding under JNNURM has a sizeable component for slum dwellers. The water supply project aims at replacing public stand posts in slum areas with individual household connections which will provide an equitable water supply. These projects also will provide potable water supply to slum dwellers and reduce their dependence on tanker water or ground water supply thereby protecting them from water-borne diseases.

The projects proposed under the heads of sewerage, storm water and lake and nalla rejuvenation have improving sanitary conditions of the slums as one of their main agenda items. These projects would translate into reduced water logging, sewerage backwash and flooding in slum areas. Reduced incidences of water and sewerage logging would have a direct impact in reducing pollution of water sources and reduction in pests and vectors.

Projects proposed under the head of roads and transportation have explored the option of implementing Mass Rapid Transport System that will provide efficient and accessible modes of transport to the urban poor. These would help them to commute to their places of work at reasonable costs.

In the previous section on strategies and action plan for slum and urban poor, various strategies have been proposed by stakeholders that would allow NMC to provide services to the urban poor by the end of seven years.

Internal earmarking of budgets for urban poor

As per the guidelines of the State Government, NMC earmarks 5% of its annual budget for providing services to the urban poor. These budgets are used in providing water supply, drains, roads, education through schools and health services through primary health care centres to urban poor. Access to basic services in slums is also provided through other budgets viz. water supply, sewerage, and solid waste management. Pursuant to the requirement under JNNURM, NMC will also provide an expenditure declaration in regard to the allocation of funds to the urban poor.

6.3.2 Optional reforms undertaken by NMC

JNNURM prescribes a list of optional reforms to be undertaken by ULB's. The strategies to be adopted by NMC in achieving these and timelines are as follows:

1. Revision of bye-laws to streamline the approval process for construction of buildings

NMC has undertaken some revisions to simplify the process of building permissions. The procedure envisages providing plan permission in a decentralised manner by allowing processing of applications at zonal offices. This process is being computerised and with the full implementation of e-Governance initiatives the same is expected to facilitate faster processing of building plan applications.

NMC has targeted compliance of this reform agenda in the third year of implementation of JNNURM projects. In order to identify the measures required under this reform initiative NMC would appoint a consultant to study the building approval process of NMC and recommend measures to simplify the same.

The consultant would assess the current system of regulation, enforcement and the framework for providing building permissions. The bye-laws would be assessed on the basis

of whether the bye-laws are in sync with the aspirations of the people and responsive to current technologies. Recommendations would also be solicited from the consultant whether a common set of bye-laws should be applicable for the city or whether there should be separate bye laws for special areas viz. heritage precincts, eco sensitive zones etc. In the context of enforcement model, NMC would expect the consultant to review the process and examine the feasibility of involving the professionals viz. architects, structural engineers, and planners in the building permission process. If found feasible, their role would be dovetailed into the process and measures adopted to make them accountable.

2. Earmarking at least 20-25 percent of developed land in all housing projects for EWS and LIG category with a system of cross-subsidisation

This has been partially achieved under ULCRA where there is a provision for land development to provide housing for EWS and LIG category. However, ULCRA is expected to be repealed, as it is one of the mandatory reforms of the State Government. In this context, the CDP discussions with its stakeholders have yet to identify concrete strategies for this reform item.

3. Revision of bye-laws to make rainwater harvesting mandatory in all buildings and adoption of water conservation measures

This reform agenda has already been implemented by NMC. Rainwater harvesting is mandatory in Nagpur from March 2005. The bye-law envisages that no building permission will be granted unless provision is made for rainwater harvesting. As per the regulation, all layouts of open spaces, amenity spaces of housing societies and new constructions of area equal to or more than 300 sq. m. shall have one or more rainwater harvesting structures such as an open well or bore well, or underground storage tank or percolation pits. The owner/society also has to ensure the maintenance of these structures. In the case of noncompliance with the aforementioned rules, NMC would levy a fine of up to Rs. 1000 per annum per 100 sq. m. of built-up area.

4. Bye-laws on reuse of wastewater

NMC is currently examining the potential of reuse of reclaimed water. In this context it has commissioned a study with technical support of USAID to examine the feasibility of implementing the same.

Under this pilot project, wastewater from houses and business centres will be piped through sewers to a wastewater treatment plant where it would progress through primary, secondary and tertiary stages of treatment before it is disinfected and put into a separate distribution system for reuse.

The recycled water would be used in industries, cooling and ash handling in power plants, landscaping, irrigation in orchards, etc. NMC has declared that "...in order to enhance the positive outcomes while minimizing the risks of wastewater use, there exists feasible and sound measures that need to be applied..." in this context. MAHAGENCO has already signed a MOU with NMC to use recycled water in the thermal power generation process.

The learning from this pilot project would translate into drafting and incorporation of byelaws on this subject. This process is expected to be complete by the year 2008.

5. Administrative reforms

The total staff strength of NMC is about 10317 employees as against a sanctioned strength of 12594 employees. Some of the initiatives that have been undertaken by NMC in this regard are as under:

- a) Institutionalising key operations: NMC intends to get its key operations certified under ISO 9001 standards, especially with respect to O&M of water supply, sewerage, solid waste management, etc. In addition, all JNNURM projects will be implemented by a special projects cell which will also secure ISO certification.
- b) Recruitment freeze: With the objective of cost control, NMC has adopted the State Government policy to freeze new recruitment, and for the last five years NMC has not carried out any major recruitments. NMC has planned to adopt a recruitment policy for heirs of deceased employees and employees taking VRS on medical grounds. NMC is currently undertaking a cadre review of various category employees. This would provide inputs to NMC on its future manning policy.
- c) Voluntary Retirement Scheme (VRS): So far NMC has not adopted any formal VRS. However, employees are free to avail this scheme without any extra benefits.
- d) e-Governance: NMC has decided to establish on-line computerisation of all procedures, which is expected to reduce several posts, cost of establishment, and at the same time increase value-added services to its citizens.

The above initiatives are some actions towards administrative reforms. NMC recognises the fact that it needs to go a long way in achieving these reforms. This process would involve taking its employees, their unions and the political establishment into confidence. The recruitment freeze would eventually reduce staff strength, as there would be no replacements for retirements. However, this is an extended procedure. NMC has committed that it would take concrete steps to achieve this reform agenda by the seventh year of implementation of JNNURM projects. A plan for achieving the same would be drafted in due course in consultation with the staff and employees of the NMC.

6. Structural reforms

NMC has yet to crystallise a plan in this regard. It is exploring options of involving consultants for advising them on what structural reforms would need to be taken by NMC.

7. Encouraging PPP

NMC has experimented with some models of private sector participation in various areas. Some of the initiatives involve development of commercial complexes, amusement parks and market centres on BOT basis, PPP in slum rehabilitation through SRA, community participation in collection of solid waste, etc.

NMC already has various plans to extend public-private partnership arrangements to various other services in the coming years. NMC as part of the financial plan for the CDP has proposed some projects to be taken up under the PPP route. NMC expects to comply with this reform agenda in the second and third years of project implementation.

7. CITY INVESTMENT PLAN, STRATEGIES AND IMPLEMENTATION PLAN

The Nagpur City Investment Plan (CIP) has been drafted after an assessment of infrastructure and service delivery gaps and numerous stakeholder consultations. Detailed project reports, wherever available, were also reviewed. This assessment has also led to the identification of sector specific strategies, implementation actions and associated reforms.

The strategies adopted primarily have three dimensions -- improving service delivery by efficiency measures, improving service delivery by creating infrastructure assets, and improving governance aspects of NMC. This section summarises the capital investments required for creating infrastructure assets and various strategic interventions required in the implementation of such projects.

7.1 City Investment Plan (CIP)

The City Investment Plan is the multi-year scheduling of identified and prioritised investments. The City Investment Plan is an important element of the CDP and is significant in terms of the city's management process and sustainability with regard to the delivery of basic services. The City Investment Plan involved the identification of public capital facilities to cater to the demands of the city populace to the year 2011-12. The projects have been identified through a demand-gap analysis of the services.

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 the future population.

The City Investment Plan and forecasted future needs for the provision of capital facilities under each identified sector is presented below. These assets will help NMC universalise services for the current population as well as accommodate the expected increase in population.

7.1.1 Summary of investments

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The total estimated capital investment required for providing efficient services to the present population and future population of NMC to the year 2011-12 is Rs.5894 crores at current prices and an escalated cost¹⁶ of Rs.6191 crores. Table 20 presents the summary of sectorwise investment requirements up to 2011-12.

More than 70% of the investments proposed under the CIP are dedicated to the sectors of MRTS and traffic management, slum development/housing, and roads and bridges. The water

¹⁶ Not all the projects identified in the CDP will be executed by NMC. NIT, MHADA, Maharashtra State Government and SRA would be responsible for some of the projects. The projects that NMC would be undertaking would cost Rs.1977 crores at current prices and Rs.2273 crores if cost escalations were built into these estimates. In addition to these projects costing Rs.1977 crores, there are two projects costing Rs.1750 crores, which would be executed on the PPP model (Water recycling and Reuse and MRTS). In total, NMC would be responsible for projects costing Rs.3727 crores.

and sewerage sectors have been allocated 10% and 8.7%, respectively, of the total investment. Sector-wise details of the City Investment Plan, capital facilities identified to be created, supportive actions and implementation aspects/strategies are discussed in the following sections in detail.

Table 20. Summary of capital investments

Se	ctor	Total investment need at current prices (Rs. crs)	% Sector- wise of Total
1	Water supply and distribution	590	10.0
2	Sewerage	515	8.7
3	Storm water drainage	246	4.2
4	Solid waste management	50	0.8
5	Slum development / housing	1592	27.0
6	Water recycling and reuse	250	4.2
7	Road and bridges	1086	18.4
8	MRTS and traffic management	1550	26.3
9	Social amenities	15	0.3
	Grand Total	5894	100.0

The CIP represents the projects that would be undertaken by NMC and other parastatals like the Maharashtra Housing and Area Development Authority (MHADA), Slum Rehabilitation Authority (SRA) and Nagpur Improvement Trust (NIT). For instance, the expenditure of slum development/housing would be undertaken by MHADA, SRA and NIT. The State Government would be undertaking projects worth Rs.650 crores of the Rs.1086 crores identified for spending on the roads and bridges sector. Of the total Rs.5894 crores of projects identified, Rs.3727 crores or 63% of the total projects would be undertaken by NMC.

Agency	Rs Crores
NMC	3727
MHADA/NIT/SRA	1517
Government of Maharashtra	650
Total	5894

7.1.2 Water supply

NMC's planned projects for the water supply sector will increase water supply to the city by source augmentation and water conservation. The projects that form part of the CIP also include strengthening of the distribution system and an energy audit.

Sector Strategies & Investment Need

Strategy Identified	Augmentation of system for increased drawl from source in line with long-term planning and equitable distribution of potable water to all
	through piped supply
Expected Outcome	Assured ability to meet year 2021 demand
Total Investment Need	Rs.590 crores

Action Plan for Implementation

Water Supply	or implementation	2006-	2007-	2008-	2009-	2010-	2011
		07	08	09	10	11	-12
Investment up to 2011-12	Rs.590 crores	73	113	72	130	98	104
	Intake capacity addition by 113 MLD Treatment capacity addition		✓	✓	✓ /		
Capital Facilities	by 113 MLD WTP, pumping machinery and pumping main Feeder mains & ESRs		√	√	√	√	
	Strengthening of distribution system of existing system			✓	✓	V	
Support &	Regularise unauthorised connections, check distribution leaks and reduce UFW	✓	✓	✓			
System Sustenance Measures	Improve collections to reach 85% collection efficiency by 2011-12	✓	✓	✓	✓	✓	✓
	Revise tariff every five years starting 2008-09 by 25%			✓			
Other Actions/ Measures	Promote individual water HSCs even in slum locations and discourage PSPs as a policy measure to increase accountability Identify potential and existing polluting sources						
Sector Notes	NMC shall be primarily responsible for implementation of all the suggested actions Capital investments on system refurbishment and replacement shall happen only after conducting water audit and identifying UFW sources. Improvement of collection efficiency is applicable to both arrears and current demand.						
Performance Monitoring Indicators	Increase water supply duration 24x7 water supply on a pilot b Cost recovery through user characteristics.	asis				ly;	

7.1.3 Sewerage

In Nagpur, only one of the three zones has a waste treatment plant. Thus, only about 70 MLD of sewage is treated against a daily sewage generation of about 280 MLD. The city lacks a proper sewerage system. NMC has thus provided in the CIP for the setting up of a sewerage

system for the entire city beginning with the north zone. The problem of sewage is acute in the north zone where the bulk of the city's slum population resides.

Sector Strategies & Investment Needs

Strategy Identified	Capacity expansion, collection and conveyance system to match additional water supply and provide for environmentally safe disposal
Expected Outcome	Synchronisation with water supply capacity, ability to meet service level targets and disposal norms and 100% geographical coverage by 2011-12
Total Investment Need	Rs. 515 crores

Action Plan for Implementation							
Sewerage Sys	tem/ UGD	2006-	2007- 08	2008-	2009-	2010- 11	2011- 12
Investment up to 2011-12	Rs.515 crores	0	0	155	206	103	52
	Finalisation of DPR	\checkmark					
Capital	North zone sewerage system	\checkmark	\checkmark	✓	✓		
Facilities	Central zone sewerage system			\checkmark	✓	✓	
	West zone sewerage system				\checkmark	\checkmark	\checkmark
Support & System Sustenance	& water connection is also connected to the UGD	✓	✓	<u>✓</u>	✓	✓	<u> </u>
Measures	Increase sewerage tax						\checkmark
Other Actions/ Measures	Isolate sewerage system from drinking water and storm water lines Ensure location of STPs under the River Conservation Plan so that benefits are maximised Improve and ensure access to sanitary facilities for the urban poor and slum dwellers Encourage 'pay & use' category of public conveniences with community involvement in the maintenance of the same						
Sector Notes	Sewerage tax coverage has to be increased Higher sewerage taxes would need to be levied if 100% recovery of O&M charges has to be achieved with the construction of the new system						
Performance Monitoring Indicators	100% geographical coverage Cost recovery through user charges (100% O&M expenses)						

7.1.4 Storm water drainage

At present only 30-35 % of the road network is covered by the storm water drainage system of open and closed drains. The CIP has made provisions for rejuvenating the natural drainage pattern through the de-silting of the natural drains, rivers and nallahs, and removal of the blockages in the natural drainage paths. To support the natural system, the storm water drainage network along the roads will also be strengthened in terms of coverage and capacity. The total investments planned in this sector are Rs.246 crores.

Sector Strategies & Investment Needs

Strategy Identified	Network expansion, conversion to closed and <i>pucca</i> drains
Expected Outcome	Universal coverage and disposal capability
Total Investment	Rs.246 crores
Need	RS.240 CIOIES

Storm Water	Drainage	2006- 07	2007- 08	2008- 09	2009- 10	2010- 11	2011- 12
Investment up to 2011-12	Rs. 246 crores	0	0	50	85	75	36
	Finalisation of DPR	✓					
	Drainage along side roads	•		✓	✓	✓	
	Nallah canalization		√	√ ·	√	· ✓	\checkmark
Capital	Strengthening existing nallahs		√	√	✓	✓	√
Facilities	Rejuvenation of Nag and Pilli Rivers		✓	✓	✓		
Support & System Sustenance Measures	Ensure that every divided road has closed drains on either side and undivided roads have drains on at least one side	√	√	√	✓	√	√
Other Actions/ Measures	Isolate sewerage system from drinking water and storm water lines Identify, delineate, sanitize and protect the natural drainage system of the city Develop common washing areas connected to treated water and drainage in identified hawking areas						
Sector Notes	All new roads to be designed shall have adequate provision for storm water drains Construction of new drains shall be taken up simultaneously along with the construction of new roads						
Performance Monitoring Indicators	All median-divided roads to have drains on either side and undivided roads on at least one side						

7.1.5 Solid waste management

The Nagpur Municipal Corporation has been efficient in collecting solid waste and maintaining cleanliness. The need of the day is maintenance of the system in an efficient manner. For this purpose, it is required that the collection and disposal system be upgraded. To cater to the needs of the population in 2011 and 2021 -- when 1300 MT and 1600 MT, repectively, of solid waste is expected to be generated every day in the city -- additional containers, collection and transportation vehicles, waste storage and transfer stations, and infrastructure at the new waste disposal site at Bhandewadi are immediately required.

To modernize the existing system, a refuse compactor system needs to be installed in the existing storage depots by 2006. A waste segregation system also should be installed at a later stage in all the storage and transfer stations. As part of augmentation of the system, a new and additional fleet of vehicles should be obtained from 2006-07 till which time the existing fleet is deemed sustainable. Waste storage and transfer stations should also be added from the year 2007-08. New containers should be acquired every year.

If the concept of a "bin-free city" has to be implemented, then smaller vehicles with a capacity of 1.5 to 2 tons and tipping arrangements need to be acquired. These vehicles will collect MSW from households, shops, etc. and directly unload them at the dumping ground.

The CIP has envisaged an investment of Rs.25 crores each for the development of a sanitary landfill site and for a project that will make Nagpur a bin-free city.

Sector Strategies & Investment Needs

2 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2						
Strategy Identified	Source segregation and door-to-door collection, effective transportation and environmentally safe disposal					
	transportation and environmentary safe disposar					
Expected Outcome Reduced waste generation, hygienic conditions and a clean cit						
Total Investment	Rs.50 crores					
Need	KS.3U Crores					

Solid Waste N	Solid Waste Management		2007- 08	2008- 09	2009- 10	2010- 11	2011- 12
Investment up to 2011-12	Rs.50 crores	10	20	20	0	0	0
	Acquisition		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Capital	Development of a new waste disposal site		✓	√			
Facilities	Land fill infrastructure and composting facility development at disposal site		✓	✓	✓		
Support & System	Implementation of complete door-to-door collection	✓	✓	√			
Sustenance Measures	Awareness campaign on source segregation	✓	✓	✓	✓	✓	✓

Other Actions/ Measures	Ensure optimum utilization of existing fleet Initiate steps towards sharing the responsibility for primary collection of segregated garbage with citizens Institutionalise rag-pickers' associations and integrate them into the system of primary collection activities Develop transfer stations in a scientific, eco-friendly manner, process waste at these sites for different types of material
Sector Notes	Collection of wet and dry waste separately by the Municipal Corporation Separate storage of wet and dry garbage in the community bins Procurement of vehicles and containers to assure 100% lifting Enforcement of fine and penalties for the offenders Storage of municipal solid waste collected from houses and disposal as fast as possible Transportation of MSW collected from houses directly to the dumping yard
Performance Monitoring Indicators	Source segregation – reduction of waste to be collected (min 70% of waste generated) Door-to-door collection as percentage of households covered (min 80%) Optimum fleet utilisation (number of trips/vehicles/day - average min of 2.5) Vehicle capacity as % of rated capacity to waste generated (min 100%)

7.1.6 Roads, transportation and traffic management

The CIP has made a tentative provision of Rs.1086 crores for developing the road transportation network in the city. This will include expenditure on the outer ring road, flyovers, bridges over rivers and road widening and improvement measures. NMC plans to have a master plan for the road and transportation system prepared with the help of an external consultant. The master plan will be finalised in 2006-07. However, some critical projects like flyovers at two junctions and bridges over physical obstacles like rivers and railway tracks would be taken up immediately. The State Government will take up the work for the development of an outer ring road at a cost of Rs.650 crores.

NMC intends to deploy new technologies like active traffic control and CCTV to manage traffic in a more scientific manner. Traffic management projects will involve an investment of Rs. 50 crores by 2011-12.

NMC has conducted a techno-feasibility study for a Mass Rapid Transportation System (MRTS) in the city. The total investment for phase-I of the MRTS project is estimated to be around Rs.1500 crores. This project will be taken up after the preparation of the transportation master plan.

Sector Strategies & Investment Needs

Strategy Identified	Increased carrying capacity through widening and improved riding quality through strengthening of existing roads; new roads to cater to missing links and developing areas; efficient, safe and accessible mass		
	transportation system for entire region		
Expected Outcome	Hassle free travel on the roads and effective transportation system		
Expected Outcome	easily accessible to everyone		
Total Investment	Rs. 1086 crores for roads and bridges; Rs.50 crores for traffic		
Need	management and Rs. 1500 crores for MRTS		

Action Plan for Implementation							
	ransportation and Traffic	2006-	2007-	2008-	2009-	2010-	2011-
Management		07	08	09	10	11	12
Investment	Rs.1086 crores for roads						
up to 2011-	and bridges; Rs.50 crores	54	69	116	90	95	60
12	for traffic management						
	Master Plan	✓					
	Outer ring road*	\checkmark	✓	✓	✓	✓	✓
Capital	Bridges over rivers		✓	✓			
Facilities	RoBs	\checkmark	✓	✓	✓		
racinties	Road widening/	✓	✓	✓	✓	√	✓
	improvements	•				•	•
	Traffic management		✓	✓	✓		
						_	
Support &	Privatisation of public						
System	1			✓			
Sustenance	transport in the city after consultation with MSRTC			•			
Measures	consultation with MSK1C						
	Hawker zones to be created	as part o	of land u	se polic	y and co	ntinuous	efforts
Other	to be made to avoid encroach						
Actions/	Increase parking charges esp	ecially in	n prime a	areas and	d congest	tion zone	es
Measures	Provide for bicycle network	s, pedes	trian fac	ilities lil	ke pedes	trian pla	zas and
	footpaths						
	Design of new roads shall necessarily have provision for shoulder, foot paths,						
Sector Notes						median	
	and concealed cabling for lighting system.						
Performance							
Monitoring	Preparation of master plan for	or roads,	traffic a	nd transp	ortation	in the ci	ty
Indicators							

^{*} Investment phasing for outer ring road is not available and hence not indicated. The State Government and not NMC would be responsible for the outer ring road project. Hence, it does not form part of the FOP.

7.1.7 Slums, housing and basic services for urban poor

The CIP includes an investment of Rs.1592 crores on slum development, EWS housing and basic services for the urban poor. NIT and MHADA have planned projects worth Rs.125 crores and Rs.42 crores, respectively. The Slum Rehabilitation Authority (SRA) scheme will be implemented to make Nagpur a slum-free city. For the period 2011-12, investments of around Rs.1350 crores are planned. The full implementation of the SRA scheme will extend far beyond the tenure of JNNURM. For those slum areas, which will not be taken up under SRA, NMC has planned investments worth Rs.75 crores. This investment will be over and above those made in other sectors like water, which has availability of basic services to the poor at its core.

Sector Strategies & Investment Needs

Strategy Identified		Rehabilitation of slum dwellers through SRA, on-site improvements and access to basic services and amenities				
Expected Outcome		Improvement in quality of services for the urban poor				
	Total Investment	Rs.1592 crores				
	Need					

Slums and Ur	Slums and Urban Poor			2008- 09	2009- 10	2010- 11	2011- 12
Investment up to 2011-12	Rs. 1592 crores*	NA	NA	15	30	30	NA
Capital Facilities	On-site infrastructure development and providing basic services to the urban poor	√	✓	✓			
	Slum development under SRA		✓	✓	✓	✓	✓
Support & System Sustenance	Inventory and geographical mapping of all slums and infrastructure	✓	✓				
Measures	Socio-economic survey of all slums	✓	✓				
Other Actions/ Measures	Frequent meetings with slum dwellers towards encouraging participation in slum development programmes, awareness creation on beneficiary contribution to project development and project implementation responsibility					eficiary	
Sector Notes	Infrastructure and basic services provision in slums shall not be in isolation, but in conjunction and in line with overall infrastructure development in the respective city Awareness of health and hygiene shall be created among slum dwellers in line with the long-term goal of moving towards individual toilets and doing away with public convenience systems.						

Performance	Provision of basic urban services to all by 2012
Monitoring	
Indicators	

^{*} Only projects costing Rs.75 crores would be undertaken by NMC. The balance would be undertaken by SRA, MHADA and NIT.

7.2 Financial Operating Plan

The investment capacity of NMC is assessed through a Financial Operating Plan (FOP) which gives a multi-year forecast of finances of the local body for the medium-term. In line with the phasing of identified investment from 2006/07 to 2011/12, the FOP has been generated for the same period. A salient feature of the FOP is that all outstanding dues, including debt and non-debt liabilities, have been taken into account.

The accounts data between the years 2000-01 and 2004-05 are used as the basis to determine past trends in revenue and expenditure and arrive at appropriate growth assumptions for each income and expense item. After forecasting the revenue account, the capital investments proposed under the Capital Investment Plan (CIP) are added to the forecast. The FOP is generated to assess the investment-sustaining capacity of the Corporation, if it adopts a project funding structures comprising grants under the JNNURM framework (accounting for 70 percent of the funding) and internal resources and loans accounting for the rest. The level of investment that NMC can sustain is then determined by studying the overall surpluses/year-to-year opening balance and debt service coverage ratio (DSCR).

If the debt service coverage ratio - DSCR (amount of surplus available to pay interest and to repay principal that is due) falls below 1.25 (i.e., less than a 25% cushion), then the investments are reduced gradually till the 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.

Revenue Account Receipts

- 1. Octroi, Taxes, Non-Tax Sources, and
- 2. Grants

Revenue Account Expenditure

- 1. Establishment
- 2. O&M on old assets
- 3. Debt Servicing- Existing and New Loans
- 4. O&M on new assets
- 5. Capital Receipt
- 6. Capital Expenditure

7.3 Financing strategies for the CIP

NMC plans to raise resources and fund the CIP by:

- Accessing the grants available under the JNNURM framework
- Using available internal resources and improving upon the same through:
 - Increasing property tax collection by improving collection efficiency and increasing the average yield per property through reassessment
 - Increasing revenues from water supply by reducing non-revenue water and rationalisation of tariffs.

NMC would also explore the option of raising debt to bridge the investment deficit. For projects which are out of bounds of NMC, various other funding options would be explored.

7.4 ULB finance projections

Current ULB finances 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. A part of the surplus will be utilized to meet the O&M expenses on newly created assets.

A spreadsheet FOP model has been customised to depict the financial position of NMC and work out the investment sustaining capacity of NMC, based on the FOP's assumptions. The model can be used to calculate future surpluses under various scenarios involving combinations of internal revenue improvement, state support, financing terms, etc.

7.4.1 Municipal Account – growth projections and assumptions

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 framework are presented below.

Table 21. Important assumptions made in the projections

Head	Assumptions
Octroi	
Growth in octroi	Octroi to increase at 12% CAGR
Property Tax	
Growth in PT assessments	Property tax assessments to increase by 5% per annum
Collection efficiency	85% collection efficiency to be attained from current level of 51% by 2011-12
Growth in tax rate	No revision in tax rates envisaged; reassessment to result in 20% increase in average yield in 2007-08
Widening the tax net	Identification and assessment of all properties in the ULB by 2007-08 through GIS based survey
Water charges	
Growth in HSCs and demand	Connections to increase by 3% per annum
Collection efficiency	85% collection efficiency to be attained by 2011-12
Water rate & new connection	Revision in rates in 2008-09 by 25%
deposit	
Reduction in UFW	UFW to be 25% in 2009-10 compared to 38% currently

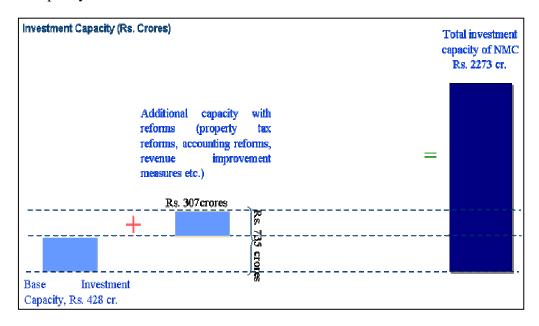
Head	Assumptions			
Other income items and capital	To increase within a ba	and of 5-10% CAGR		
grants				
Expenditure items growth rate	To increase within a ba	and of 5-10% CAGR		
Salaries/ wages	To increase by 7% per	annum		
Project financing terms under	JNNURM framework			
JNNURM framework	50% GoI grant, 20% G	oM grant		
(All urban infrastructure/				
governance/urban poor related		overnance projects - Contribution of		
projects except land acquisition	25% of the total	grants received under JNNURM		
costs)		Infrastructure Fund by 2011-12		
	<u>Urban poor/slums projects</u> - Contribution of 10% of total			
	grants received under JNNURM framework to the State			
	-	y 2011-12. O&M expenses on new		
		slums projects) also to be met from		
	the fund			
Loan terms for commercial	Loan period:	7		
borrowings of NMC	Repayment method: Equal annual installments			
	Interest rate:	7.5%-9% per annum		
Debt Service Coverage Ratio	DSCR of at least 1.25	A.C		
O & M expenditure arising		M for new assets is calculated based		
from new assets (from 2007-	_	ns (O & M cost as a % of capital		
08)	costs):			
	Water supply 4% Sewerage 4%			
	Solid waste manageme	ant 7%		
	Roads & bridges 7%	ont 170		
	Storm water drainage 4	1%		
	Traffic management 10			
	Road widening and im			
	Non-JNNURM capex :			
	<u> </u>	and beyond a growth rate of 5% is		
	assumed on the base O	•		
Outstanding debt liabilities		installments over a 7-year period		
		MC also owes MJP an amount		
	equivalent to Rs.88 cr	ores; it has been projected that this		
	_	aid over two years: Rs.53 cores in		
	2006-07 and Rs.25 cros	res in 2007-08		

7.5 Investment capacity/ sustenance

Given the existing financial position of NMC, the revenue and capital accounts of NMC are projected against the growth scenario and assumptions presented above. The revenue improvement and expenditure control measures coupled with the availability of grants under the JNNURM framework give NMC an investment capacity of Rs.2273 crores (escalated costs) over the next six years against NMC's investment need of Rs.3727 crores (at current costs) by 2011-12. The investment capacity even with implementation of reform measures is still found to fall short of the funding requirements.

7.5.1 Impact of JNNURM reforms on investment capacity

It is observed that following current growth trends, NMC can sustain an investment of Rs.428 crores only. The implementation of the reform agenda as desired by JNNURM, along with some amount of leverage, will allow NMC to raise its investment capacity to Rs.735 crores. When this amount is supplemented with JNNURM funds and debt raised by NMC the investment capacity of NMC increases to Rs.2273 crores.



7.5.2 Sources of funding

The CDP has identified projects, which are estimated to cost Rs.5894 crores at current prices. However, NMC's would be responsible for projects costing only Rs.3727 crores. However, JNNURM grants, internal accruals of NMC and debt can together fund projects worth Rs.2273 crores at escalated prices, factoring in the price escalation on the project costs over the six year period. The source of Rs. 2273 crores would be as follows:

Table 22. CIP funding pattern

Source of funding	Source	Amount (Rs. crores)	% of Total Investment
GoI Grants	JNNURM	1137	50.0
GoM Grants	JNNURM	455	20.0
Loan	Open Market/ FIs	185	5.6
Own sources	NMC	496	24.4
Total		2273*	100.0

^{*}This is the escalated cost while at current prices the cost is Rs1977 crores.

7.5.3 Bridging the investment deficit

Identified NMC's investment projects during the tenure of JNNURM are estimated to cost Rs.3727 crores while the investment capacity is Rs.2273 crores. NMC has identified opportunities for bridging the investment deficit. Some of the identified projects like MRTS

and water recycling and reuse can be funded through the public private partnership (PPP) route. The investments in these two projects aggregate to Rs.1750 crores at current prices.

Nagpur City Development Plan Projects

The identified projects along with their respective implementing agencies are shown in the table below.

Sector			Source of Funding				
	In Rs crores	PPP	State Govt	MHADA / NIT /	NMC / JNNURM		
Water supply and distribution	590	-	-	-	590		
Sewerage	515	-	-	-	515		
Storm water drainage	246	-	-	-	246		
Solid waste management	50	-	-	-	50		
Slum development / housing	1592	1,100	-	417	75		
Water recycling and reuse	250	250	-	-	-		
Roads	1086	-	650	-	436		
MRTS and traffic management	1550	1,500	-	-	50		
Social amenities	15	-	-	-	15		
Grand total	5894	2,850	650	417	1,977		

8. WAY FORWARD

The JNNURM scheme marks an important milestone in the development of urban infrastructure and the reform agenda of the Government of India. It provides an opportunity for municipal corporations to fill the increasing gap between existing and desired service levels, even as the pressure on urban infrastructure mounts. It is indeed a stepping-stone for municipal corporations to achieve improvement in service delivery, governance and financial sustainability.

It is not so much the philosophy of JNNURM that will demand performance from cities. Peer cities will create pressure by setting examples and raising the bar. It would no longer suffice to initiate a reform at the city level and stay content with the progress. The quality of reforms would be constantly benchmarked with those of its peers; the pace of progress would be measured against the standards set by first movers.

This chapter identifies some of the challenges that NMC and Nagpur city might have to face in the future. Wherever possible, an attempt has been made to provide a workable solution or a mitigation step. In most of the cases these issues would need to be deliberated to ensure that NMC is not caught unawares and addresses the situation appropriately.

However, a successful application for JNNURM in the form of the preparation of the CDP is barely the beginning. The amount and extent of benefits, which will accrue to the Nagpur Municipal Corporation (NMC) and the real development of the Nagpur city as a whole, will depend upon the progress of the commitments made by NMC, both in service delivery outcomes and in reform implementation suggested as part of CDP. In order to achieve the vision and stated mission, NMC has to focus on the following three areas:

- Implementation of the City Development Plan
- Challenges
- Opportunities for Nagpur and NMC

8.1 Implementing the CDP

The implementation of the CDP has two dimensions: the reform dimension and the investment dimension. From the point of view of the reform dimension, NMC is in a fairly good position. It has achieved a fair level of progress in the areas of accounting reforms and e-Governance. However, it will need to accelerate its efforts in the areas of property tax and the levy of appropriate user charges. From the investment angle, currently NMC has been investing and implementing capital works to the tune of about Rs.80 crores per annum. With the advent of JNNURM, the Corporation will have to undertake projects of around Rs.600 crores every year. This will require tremendous capacity building within the Corporation. The following points outline the challenges that Nagpur will face during the implementation of the CDP.

8.1.1 Scaling up

A major challenge before NMC will be to abandon its traditional approach of implementing projects using its revenue surplus and monitoring them with the help of the Corporation staff. To implement the proposed scale of projects, NMC will need to identify innovative contract modes and take support from private/external agencies in the form of project development, project management, quality monitoring, etc.

8.1.2 Creating awareness amongst citizens

The implementation of the CDP will need to be monitored independently; the implementing agency should be made accountable to the citizens. The challenge before NMC will be to reach out to these citizens and keep them well-informed about the implementation of the CDP and the responsibilities of the Corporation under JNNURM. This will bring accountability in the system and ensure course corrections from time to time. To achieve this, NMC needs to formalize a monitoring committee with representation from NMC, citizens' forums and institutions and industry to monitor project implementation and reforms.

8.1.3 Institutionalising the CDP and focusing on outcomes

NMC will also face the challenge of internalizing reforms within the Corporation. Service provision will need to be internalized in the Corporation. Today, the departments within NMC are not totally accountable to the city. NMC is provided with budgets, but the departments are not accountable for service performance. There is a need to make the departments accountable and focused on their performance. NMC must provide resources to the departments and ensure that they deliver performance in terms of better service delivery to the citizens. The support that the administration provides to these departments needs to be measured and against that, the service delivery they need to achieve must be gauged. Fostering a focused approach on outcomes in the departments will be a challenge for NMC. This should apply across all departments, i.e., those which provide services, administration units and enforcement departments such as the Building Permissions Department.

8.2 Challenges in the future

Nagpur is still considered one of the tier II cities of the country. Of late, given the good quality of urban infrastructure like roads, and being an important centre of learning particularly in the field of engineering, Nagpur is slowly catching the attention of many corporate houses in the country. The favorable mention of Nagpur in the KPMG-NASSCOM survey and IDC-Dataquest study testifies to the economic potential of Nagpur. This, combined with the MIHAN project has the ability to power Nagpur's economy in the coming years. The higher economic growth and relatively better quality of life enjoyed by Nagpur's citizens will increase net migration to the city. This will result in a higher population growth rate than what Nagpur has experienced in recent decades. This will further increase the pressure on urban services and possibly the quality of life in Nagpur will deteriorate as has happened in every other major city in the country. The challenge before NMC is to transit from a tier 2 city to a tier 1 city without breeding the ills that plague the tier 1 cities in the country.

8.3 Opportunities in the future

The city of Nagpur has several opportunities which the Corporation should build on. A description follows of the opportunities on which Nagpur can capitalize.

8.3.1 Harness the human resource potential for furthering growth

Nagpur, next to Pune, has the largest number of engineering colleges in and around a city in Maharashtra. Unfortunately, the students graduating out of these colleges do not find jobs matching their profiles in Nagpur. This leads to out-migraton of a talented class of Nagpur's residents. The challenge for Nagpur city is to create jobs in the city, which will retain this talented pool and spur them to contribute to the further growth of the city. The possibility of technology majors like Satyam Computers and aircraft manufacturer Boeing setting up shop augurs well for the city. For greater sustainability, linkages between industry and institutions must be established and nurtured.

8.3.2 Building equity

In its resolve to become a well-developed city, NMC should not lose focus on the 40% slum population of the city. The challenge before the city is to ensure that basic services, including housing, must be provided in an equitable fashion to all sections of the society. NMC's important role in providing primary and secondary education to the economically weaker sections should not be overlooked. A workforce empowered with basic education, can capitalize on the growth opportunities created in the city.

I. CITIZENS' DEMAND SURVEY: METHODOLOGY AND FINDINGS

The survey was quantitative in nature and most of the questions asked during the survey were objective in nature. (For a sample survey questionnaire, refer to annexures). For sampling, stratified random sampling procedures were followed. The starting point was selected from the electoral rolls. The number of starting points for each ward was determined based on the population of the ward. The higher the population in a ward, the greater the starting point in that ward. Thereafter, the addresses of the sampled respondents were collected from the electoral voter lists. On completion of the study, the sample respondents were weighted to Nagpur's universe of socio-economic classes (SEC), age and gender distribution.

Altogether, 2015 households were surveyed (about 0.1% of Nagpur's population). Classification of the sample by age, gender and SEC is given in the table below. The findings of the survey were presented during the subsequent stakeholders' prioritisation workshop. The survey findings are given overleaf.

Gender/ Age	All	A	В	С	D	Е
SEC						
Male						
18-24	159	12	32	46	44	25
25-34	316	20	74	76	88	58
35-44	235	16	54	52	56	57
45-54	140	18	28	30	31	33
55+	185	42	37	42	37	27
Males Total	1035	108	225	246	256	200
Female						
18-24	188	15	26	52	45	50
25-34	333	30	68	93	85	57
35-44	252	38	48	56	53	57
45-54	123	27	20	28	23	25
55+	84	18	13	22	12	19
Females Total	980	128	175	251	218	208
ALL	2015	236	400	497	474	408

KEY FINDINGS OF CITIZENS' DEMAND SURVEY

- The overall satisfaction index is at 64%, which is a good index.
- Highest satisfaction was in Ward 2 followed by Ward 8.
- The lowest was recorded in Ward 4 followed by Ward 9, Ward 1 and Ward 3 in that order.
- In terms of SEC, SEC E is least satisfied, while SEC B and A are better satisfied.

WATER SERVICES:

The survey indicates that Water Services are well managed by the corporation in Nagpur. Of the total respondents surveyed, 80% had a water connection in their premises. More than 50% of the respondents expressed that they receive water at adequate pressure, but nearly 19% of respondents in Ward 3 said that they never receive water at adequate pressure. Though the average supply of water

per day was approximately 4 hrs. (across all wards), the respondents were happy with quantity of water supplied. Ward 2, 3, 5, and 10 reported a very low supply of water of 3 hrs. a day.

The balance 20% of the respondents, in the absence of a water connection depended heavily on 'Government Sources' followed by 'wells' for their requirements. Majority of the respondents are willing to pay 10-20% more for better quality of water services.

Citizens in general reported their reluctance to adopt a metered water supply system. It was observed that there is a direct correlation between satisfaction with the existing service levels and the willingness to adopt a metering system.

DRAINAGE SERVICES:

Summary: Eighty-three percent of the respondents had an underground drainage system, of which 37% of the respondents said that their drainage chokes. Choking problem is evident in Ward 4, 8 and 9, where majority of respondents had said that the drainage chokes once in 7 days.

40% of respondents with underground drainage said that the drainage chokes during peak hours and approximately 20% of them have said that the corporation never cleans it.

In the absence of an underground drainage system, the respondents dispose sewage through 'septic tanks' and 'open drains'.

SOLID WASTE MANAGEMENT:

Majority of the respondents dispose of their garbage at their doorstep. The respondents also reported that the Corporation collects garbage from the doorstep normally on a day- to- day basis and are more than satisfied with the services. Majority of the respondents are willing to pay less than Rs. 10 for better quality service.

70% of the respondents mentioned that the Municipal Corporation instructed them to separate the garbage into dry and wet parts.

'Collection of waste from community bins', 'road sweeping', 'public toilet facilities' and 'general cleanliness' have average scores nearing 3.5 of a maximum possible score of 5. In general, 3.5 out of 5 represents an above average performance.

ROADS AND TRAFFIC:

The respondents gave a very clear indication that 'increase in population', 'lack of maintenance of roads', 'poor public transport' and 'growing economic activity' are the 4 top reasons for congestion on roads and also that an increase in parking charges is not going to affect the use of private vehicles. More than 35% of the respondents (pedestrians & motorists) expressed that Nagpur roads are not safe. 'Broadening of roads', 'better control of traffic by policeman', 'state buses to run in more routes', 'construction of more flyovers' were the solutions suggested by the respondents to manage traffic in Nagpur.

JOB OPPORTUNITIES:

A very grim picture of opportunities of employment in Nagpur emerged from the respondents. The majority of the respondents has expressed that they would leave Nagpur in search of greener pastures. When asked the reasons for leaving Nagpur - 'better jobs', 'better living conditions', and 'better education' were mentioned.

OTHERS:

- Majority of the respondents do no agree that the slums should be shifted outside Nagpur, but they do agree that the services provided to the poor should be subsidized.
- Toilets and bathrooms are well maintained and supported by adequate water supply.
- Nearly 43% of the respondents mentioned they had faced problems with bills related to property tax.
- Only 18% knew where to go to complain in NMC and only 14% have ever sent any complaints to NMC; awareness was better in Ward 3 (42%), 2 (22%) and 7 (22%).
- While 62% of those who complained mentioned that their complaints were resolved, the other 38% mentioned that their complaints did not get resolved within a reasonable time frame.
- "More ward offices" and "direct telephone lines" are the means preferred to make a complaint.
- Over 50% reported that no information is received on all the issues checked.
- 'Clean and green' city seems to be the dream of the citizens for Nagpur city followed by 'safe and peaceful'.

DISTRIBUTION OF INVESTMENTS:

A hypothetical scenario, where the respondents would be given 100 crores and asked to invest in the development of Nagpur city was checked. The respondents mentioned various areas; the breakup is as below:

- ❖ 17% on slum development.
- ❖ 13.9% generate jobs/ attract more industries
- **❖** 12.9% roads
- ❖ 12.2% municipal services water, sewerage etc.
- 11.9% on schools and hospitals and others

NMC was the preferred choice to provide municipal services in Nagpur; secondary choice was "engaging contractors".

II. FACT SHEET: WATER SUPPLY SYSTEM IN NAGPUR

Water sourcing

NMC sources about 480 million litres per day (MLD) of water. Of this, only 12 MLD (2.5%) is drawn from ground water sources, making the dependability on ground water quite low. But steps are already in place to recharge ground water sources through rainwater harvesting and rejuvenation of lakes in and around the city. This would supplement surface water sources in the long-run. But NMC has no concrete plans in place to augment ground water sources for supplying drinking water to the city.

The three main surface water sources are Gorewada Tank, Kanhan River and Pench Canal. The Gorewada Tank source was developed in the year 1911. As the city grew and the need for water increased, the Gorewada Tank source became inadequate. As augmentation was not possible due to site conditions, surface water from River Kanhan, 14 km., away from the city, was considered. In 1976, the Irrigation Department, Govt. of Maharashtra, executed a storage dam across River Pench for a hydroelectric project at Totaladoh and a pickup dam at Navegaon Khairy. In 1982, the Pench-I Scheme was commissioned, followed by the Pench-II Scheme in 1994 and Pench –III Scheme in 2003.

According to NMC sources, if steps are not taken, Nagpur would face a deficit situation of 62 MLD in 2011. In anticipation of the increase in demand, NMC has initiated steps to increase the supply of water. The Pench-IV water supply project will increase water supply capacity by 113 MLD. The planned capacity up to 2031 will be just adequate to meet the projected demand.

Table 23. Water demand vs. supply up to 2031(Master Plan)

	Table 25. Water demand vs. supply up to 2051 (Master Tran)						
Year	Demand (MLD)	Supply (MLD) (As on 2004)	Future Planning (MLD)	Surplus/Deficit over Existing Supply (+/-) (MLD)	Net Surplus / Deficit over Existing + Future Planning Supply		
2011	532	470	113 (Pench-IV additional)	(-) 62	+51		
2021	709	470	113 (Pench-IV) + 175 (Rahari-1)	(-) 239	+49		
2031	934	470	113 (Pench-IV) +175 (Rahari-I) +175 (Rahari-II)	(-) 464	(+) 1		

Source: NMC

Water treatment

At present, Nagpur has five water treatment plants with a total capacity of 470 MLD¹⁷. All the existing water treatment plants are of the conventional type with aeration, clarification

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¹⁷ Source: Environmental status report of Nagpur, 2002-03.

and filtration as their main units. All treatments plants are functioning up to their desired capacity.

Table 24. Water treatment plants in Nagpur

No	Water Source	Water Treatment	Year of	Distance	Existing
		Plant	commissio	from the	capacity
			ning	city (kms)	(MLD)
1	Gorewada Tank	Old Gorewada	1936	8	16
2	River Kanhan	Kanhan Water Works	1942 18		108
3	Pench Dam	WTP Phase - I	1981	14	113
4	Pench Dam	WTP Phase – II	1994	14	133
5	Pench Dam	WTP Phase - III	2003	14	100

Source: NMC

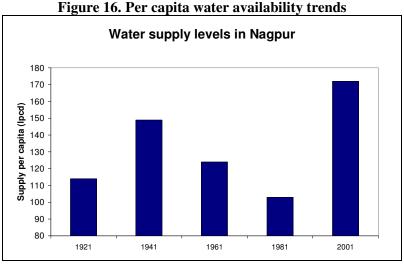
Water supply and coverage

Nagpur's water distribution system is about 1700 km long and divided into ten water distribution zones. As described in the table below, of the total water sourced, i.e., 625 MLD, only 78% (490 MLD) reaches the distribution system after treatment (Table 25). In spite of that, the current per capita availability of water in Nagpur is quite high (Figure 16). Though there have been some fluctuation in the past few decades, the figure which was 172 lpcd in 2001 has further improved to 200 lpcd in 2004. This is mainly due to the continuous addition of water sources to the water supply system.

Table 25. Key statistics: water supply and distribution system

Tuble 201 itely statistics. Water supply and distribution system					
Description	Details				
System Input Volume	625 mld				
Actual Water Supply in Distribution System	490 mld (78%)				
Actual Water Sales	241 mld (38%)				
UFW (Gross)	384 mld (62%)				
UFW for Raw Water up to WTP	135 mld (22%)				
UFW for Treated Water	249 mld (40%)				
Total Non-Revenue Water (Administrative + Real)	384 mld (62%)				
Administrative Losses (apparent losses + free	236 mld (38%)				
water)					
Real Losses	104 mld (17%)				
Unidentified Losses	43 mld (7%)				

Source: NMC



Source: NMC officials

As compared to other cities in India, per capita water supply levels in Nagpur are quite high. While Surat and Lucknow are comparable with 198 and 199 lpcd levels of water supply, respectively, Nagpur is way ahead of Bangalore and Ahmedabad. However, it ranks lower than Chandigarh in per capita water supply levels. Nagpur also manages to meet the UDPFI guidelines, according to which 135 lpcd is the minimum acceptable level, while 150-200 lpcd is the desirable level. But the city ranks significantly below standard in terms of transmission and distribution losses, which must be within 15-20% of the water sourced. Currently, these are slightly higher than 60%. For every 200 lpcd of water supplied to the consumer, about 97 lpcd is lost in the transmission and distribution process.

At present, there are about 1.97 lakh domestic metered water connections in Nagpur, which serve about 85% of Nagpur's population (the rest is served through public stand posts). Assuming an average household size of five, this implies approximately one water connection for every two households.

Metering and cost recovery

Of the total 1.97 lakh connections, about 75% are metered. This leads to high NRW levels (non-revenue water). Thus, with the combined effect of UFW levels and NRW levels, the cost recovery of the water supply system is quite low. Present flat rate tariffs lead to poor cost recovery and encourage wastage. Of Rs.5.5 per unit of cost incurred, only Rs.3.5 is being recovered. To make the system financially sustainable -- besides addressing issues of high leakages and poor collection efficiency -- NMC also needs to review its administrative expenses in terms of staff strength and introduce a consumption-based tariff system.

200000 41950 42038 42068 42108 49204 100000 139219 140054 140169 147993 147993

■ Metered connections ■ Un-metered connections

Number of connections

2000-01

Figure 17. Proportion of metered connections in Nagpur

Table 26. Key statistics: water supply connections, cost recovery and distribution losses

2001-02

Description	Details
Water Cost / Unit (1000 litres.)	Rs. 5.55/unit
Minimum Water Tariff (1000 litres.)	Rs. 3.50/unit
Total Water Connections (inclusive of authorized unbilled)	Approx. 2.0 lakhs
Avg. No. of Persons per Connection (90% piped water)	10-11
Total Water Connections (inclusive of unauthorized)	Approx. 2.45 lakhs
Total Treated Water Losses (real + apparent) excluding raw	227 mld
water losses [490 mld - (billed consumption + unbilled	
authorized consumption)]	
Treated Water Losses per Connection	926 litres /connection/day
Treated Water Losses per Person	97 litres /person/day

2004-05

III. ROLES OF NMC AND OTHER GOVERNMENT ORGANIZATIONS IN PROVIDING URBAN SERVICES

Service/ sector	NMC's responsibility	Other government agencies related
Water supply	Purchase of water from the Irrigation Department, its treatment and distribution Preparation of water supply schemes Fixing tariffs and its implementation after approval from General Body and Government of Maharashtra Water supply through bore-wells Transportation of water through tankers in select areas Metering, billing and bill collections Monitoring water quality	to the sector MPCB sets the standards for water quality NIT provides the facility to the citizens in the seven layouts under its jurisdiction
Sewerage	Collection, transportation and treatment of sewage Re-use of waste water (under consideration)	MPCB sets the standards for sewage treatment NIT provides the facility to the citizens in the seven layouts under its jurisdiction
Storm water drainage	Collection and transportation of storm water through drainage system and natural drains	NIT provides the facility to the citizens in the seven layouts under its jurisdiction.
Solid waste management	Door-to-door collection of solid waste Collection of waste from community bins Transportation of solid waste to disposal site and its treatment Developing proper disposal methods like waste-to-energy projects, landfill site, etc.	
Slum improvement	Implementing programs for the urban poor/slum improvement schemes	
Land use planning	Preparing development plan Implementing building control and regulations	Building and Construction Department, GoM, plans and constructs all the public building in

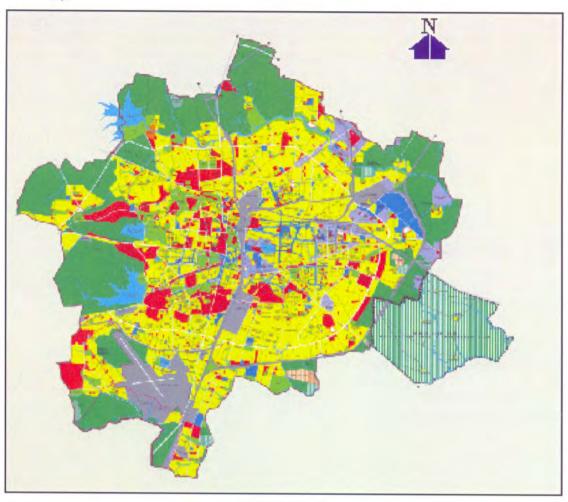
Service/ sector	NMC's responsibility	Other government agencies related to the sector				
	Demolition of illegal structures	the city Maharashtra Housing and Area Development Authority (MHADA) constructs and maintains housing projects in the region Heritage Committee identifies heritage structures and defines building norms and rules for such structures and neighbouring development				
Roads and bridges	Preparation of master plans for road development Development of arterial roads and their linkages to the city areas Maintenance of existing roads, including patch work	NIT provides this service to the citizens in the seven layouts under its jurisdiction Public Works Department (PWD) develops and maintains national highways, state highways, district roads and outer ring roads Maharashtra State Road Dev. Corporation (MSRDC) works in the area of road widening and strengthening of roads and flyovers; for these projects, it prepares the plans, and estimates and implements the projects				
Traffic management	Intersection development and beautification Providing signage and traffic control systems	Regional Transport Office (RTO) keeps vigil on vehicles on the road; checks the authenticity of the vehicle and registers them, issues the licenses and issues permits Traffic police controls the traffic, enforces traffic rules, and penalizes law breakers				
Street lightning	Providing street lights at all the identified points/roads in the city Operation and maintenance of street lights					
Parks and gardens	Developing parks and gardens for the citizens Maintenance of public parks and open spaces	NIT provides this service to the citizens in the seven layouts under its jurisdiction Forest department maintains select gardens, zoos and forest nursery (located on Seminary Hills) PKV has developed and maintains select gardens, zoos and botanical gardens and amusements facilities therein				

Service/ sector	NMC's responsibility	Other government agencies related to the sector
Health	Executing immunization programs Providing primary health care services	Public Health Department plans and finances the immunization schemes
Education	Providing primary and secondary education facilities to the urban poor	Nagpur University provides higher education facilities
Markets	Developing and maintaining markets Construction of shopping malls	NIT provides this service to the citizens in the seven layouts under its jurisdiction
Fire	Attending emergency fire calls	

Source: NMC

IV. FINANCIAL OPERATING PLAN

In Rs Lakhs	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06E	2006-07E	2007-08E	2008-09E	2009-10E	2010-11E	2011-12E
Octroi	10186	11753	12499	13387	15296	16300	18256	20447	22900	25648	28726	32173
General Tax on Properties	4423	5904	6047	5511	5784	7300	7961	8659	9154	9569	9974	10400
Total Tax Revenues	13965	16776	17640	18042	20182	23600	26217	29106	32055	35218	38700	42573
Non-Tax Revenues	4718	6266	6436	6815	7621	7326	7449	7939	9564	10357	12058	12664
Grants	2204	2261	1962	2959	3457	3003	3153	3310	3476	3650	3832	4024
Total Revenue Income	20887	26192	26954	28683	32170	34997	36819	40355	45095	49224	54591	59261
							1	1	1.12	1.09	1.11	1.09
Expenditure												
Establishment Expenditure	7539	8959	9138	9665	10484	10739	11598	12526	13528	14610	15779	17041
Pension	1880	2124	2581	2485	2395	2600	2808	3033	3275	3537	3820	4126
O&M on Old Assets	7410	7694	3174	6012	7672	6076	6380	6699	7033	7385	7754	8142
O&M on New Assets	0	0	0	0	0		619	1608	3795	6636	8845	10301
Debt Servicing	735	1266	5143	3208	1979	4221	2400	8024	6716	4718	9467	6593
Provision for non-JNNURM Capex	0	0	0	0	0	0	2000	2100	2205	2315	2431	2553
Total Revenue Expenditure	17564	20042	20035	21370	22530	23636	25805	33989	36553	39202	48097	48756
Revenue Surplus/(Deficit)	3323	6149	6919	7313	9640	11361	11014	6366	8542	10022	6494	10505
Capital account							0	278	301	367	334	592
Reciepts - Regular	358	165	6610	0	0	0	0	0	0	0	0	0
NMC Contribution	0	0	0	0	0	0	4182	6550	12000	11000	6500	9457
NMC Debt Raised	0	0	0	0	0	0	0	0	2500	7800	8200	0
JNNURM Grant	0	0	0	0	0	0	9758	15283	33833	43867	34300	22066
Total Reciepts	358	165	6610	0	0	0	13940	21833	48,333	62,667	49,000	31,523
Capex												
JNNURM Capital Expenditure							13662	21810	48267	62700	48743	32115
Total	4685	8794	9595	8032	7915	12500	13662	21810	48267	62700	48743	32115
Capital Account Surplus / (Deficit)							278	301	367	334	592	0
NMC Debt Raised for Revolving Fund							0	0	0	0	14789	14789



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Nagpur Municipal Corporation



City Development Plan

Nagpur Municipal Corporation

ANNEXURE

June 2006

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ANNEXURE A: CAPACITY BUILDING SESSION FOR NMC OFFICIALS

Date: 17th January 2006

Agenda: Capacity building workshop for municipal and other government officials in Nagpur for city vision and mission preparation exercise.

Attendees: Municipal Commissioner, NMC officials, representatives of government organizations such as Maharashtra State Road Transport Corporation, Maharashtra Airport Development Corporation, Regional Transport Office, Traffic Police and Maharashtra Industrial Development Corporation and the CRISIL Infrastructure Advisory Team

Time: 12 noon

Venue: Nagpur Municipal Corporation premises

The proceedings began with the address by the Municipal Commissioner (MC) Lokesh Chandra on the need for conducting this workshop. He sought the participation of all officials in the preparation of the CDP. MC emphasized the need to compliment each other to have a vision for Nagpur and fit each other's aspirations in the CDP. The CDP will receive support from the central and state government in the form of grants. As a part of the program, some reforms have to be carried out. The programs need to be self–sufficient. Creation of infrastructure is not a problem, its operation and maintenance is difficult. It is not a one-time activity. MC urged the officials to take up more and more projects to meet their requirements. This has to be accompanied by undertaking revenue generation activities. The local reforms need to be supplemented by state level reforms. The MC stressed on the importance of clarifying the doubts as early as possible in the preparation of the CDP. MC then asked Dr. Ravikant Joshi to begin the presentation on JNNURM and elaborating on the process of preparing the CDP.

Dr. Joshi in his presentation first outlined the objectives of JNNURM. This was followed by description of the stages involved in the preparation of the CDP. Dr. Joshi said that NURM is a totally different scheme. The difference is in the fact it is not for the government officials to decide but the citizens themselves will have to make a choice. There is no cap on money. It is based on merit and bankability of projects. There has been no scheme like this so far. NMC will set its own goals, decide itself on its requirements and enter into an agreement for that. What would matter is how well NMC lives up to its commitments. There would be multiple levels of approval for grants. It is important that the process is consultative and transparent.

There is a tremendous pressure on urban services. Thrust must be on improving delivery of various urban services. There are multiple actors and inter-linkages. The idea is not to have state-of-the-art infrastructure. Every rupee going in for infrastructure development must have economic development trigger effect. Otherwise, it might have a decelerating effect. Very high cost infrastructure may lead to very high operating expenditure. This must be avoided. The CDP must aim at improving the institutional efficiency as well as providing access to the urban poor. Finally, it must be based on demand of the people; therefore a consultative process is important.

The CDP must address the following issues:

- Service delivery
- Land use
- Transport
- Environment

The preparation of the CDP must follow the following guidelines:

- 1. Various issues are interlinked. So the inter-linkages will have to kept in mind while preparing the CDP
- 2. There would be two plans to be submitted to different ministries. Urban poor services plan is a must
- 3. Private sector participation strategies must be in plans. We must leverage the process to attract private investments. The expectation from the central government must be kept at a minimum.
- 4. Two issues would cut across the entire plan scheduling and investment planning. Though resource is not a constraint, there is an important need to empower all concerned officials to implement the plan.

The public consultations will be at three different levels:

- One to one citizen survey
- Stakeholder group discussion
- Internal vision building by the municipal and other government officials

The steps involved in the preparation of the CDP are:

- 1. City assessment CRISIL Infrastructure Advisory is here only to facilitate the CDP preparation
- 2. Formulating the vision for the city
- 3. Itemized list of works in a priority order
- 4. Whether all these are possible, how to fund each of these projects and what would be the resource mobilization plan
- 5. It's a demand-based approach and at the same time it must be remembered that there are costs attached to every demand.

Not too many cities have started the process. Dr Joshi said that he was certain that Nagpur would be among the first 10-15 cities in submitting its CDP provided that NMC follows the timelines.

Question and Answer Session

(MC- Municipal Commissioner, NMC; RJ: Dr. Ravikant Joshi)

Q: What would be the role of Nagpur Improvement Trust (NIT) in the NURM process? Can we include urban agglomerations (UA) areas in the development plans?

MC: The implementing agency can be anybody and but the NMC will be the channelling agency.

RJ: NMC is the legitimate authority for the developing the city. In Ahmedabad for instance, Ahmedabad Municipal Corporation (AMC) and Ahmedabad Urban Development Authority (AUDA) are the two implementing agencies for city. Government of Gujarat to appoint a nodal agency for the channelling of funds.

Q. 30% share to come from whom – NMC or NIT?

MC: The financing plan has to be different. State Government will decide the allocation of funds.

Q. Can you separate urban development and economic development? NMC cannot do anything if the tax payer is not sound. How will CRISIL address the development process? While we think of road development and city development plans, it is only economic development that will ensure sustainability. – Maharashtra State Road Development Corporation (MSRDC)

MC: City Development is not just about creation of infrastructure but also about the need to make it economically viable. There is a need for broad-basing the development plan for the city.

- Q: The cargo hub, which is being developed, has potential to generate employment for 1.2 lakhs people. The increase in economic activity will increase the pressure on civic services. Maharashtra Airport Development Corporation (MADC) is willing to share its plans for the hub project with NMC to enable it to make its plans more comprehensively.
- Q: It is essential to provide primary health services to urban poor. At the same time there is a need to have the best hospitals for cancer hospital and organ transplant. Rehabilitation of HIV infected people is needed since HIV will become a major problem in the years to come. One aspect that is missing in Nagpur is the provision of emergency medical services something like 911. There is also a need for sports centres and good public transportation systems.
- Q: Public health services need to be very good preventive care; mother and childcare and periodical check-up of people need to be done. If there is cleanliness, 90% of the health problems will be solved.
- Q: Maharashtra State Energy Distribution Company Limited has prepared a five-year construction plan and which is awaiting approval from NMC. We need time to prepare a 25-year plan in line with the CDP. At the same time, why is investment in power infrastructure not a part of NURM? MC: The availability of power will be critical for the growth of the city. NMC will be important for the overall development of the city.
- Q: Forts around Nagpur city need to be opened for tourists. Water parks need to be developed MC: Nagpur can be gateway for wild life tourism. There are several wild life parks around Nagpur. Nagpur should make the visitors transiting through the city spend some more time in the city. The zoo can be converted into a nice safari.
- Q. Slums are a problem no cut-off date for slums. Who is to be included in urban poor? Land tenure needs to be defined. If there is no cut-off date, slums will continue. Maharashtra Housing and Area Development Authority (MHADA)

MC: Slum is the choice of living for the poor. Affordable and adequate housing needs to be planned to stop proliferation of slums.

Q: Urban renewal and urban revitalization – what is the difference?

The CDP needs to address the development plan in the areas between the core city and the ring road. Land use rules need to be looked into.

- RJ: This is not a physical planning exercise but an economic and social planning one. The question that needs to be asked is how can Nagpur be the engine of growth in central India? People will come here only if there are jobs. Why is Pune ahead of Nagpur? These are the things that need to be probed. Land use needs to be planned. Pune allowed the development of IT centres in residential areas.
- Q. Land use plan is ready but how are the socio economic objectives integrated in the land use plan? Legislative provisions in the act allow tampering with proposed land use plan. This needs to be stopped
- RJ: CRISIL will not decide on land use planning. CRISIL will vet the feasibility of the plan envisaged by the citizens of Nagpur.
- Q: Every city in Maharashtra has a development plan. Maharashtra regional town planning act needs to be re-written. Land development authority needs to play a role like Gujarat. Nagpur Area Development Authority needs to be created. NIT has been made responsible for regularizing illegal constructions. NIT's role needs to be questioned in NMC matters. Time has come to do away with NIT. Nagpur is different from Pune Nagpur is a planned city huge areas under public possession NIT or NMC owns the land. City centres are in shambles. Dharampeeth area is in bad shape. Land belongs to NIT / NMC. Lot of money can be raised by way of redevelopment. Micro planning is

essential. Nagpur is developing on corridor lines – Nagpur-Butbori corridor and MIHAN. That is why ring railway was dropped. Can we look into MRTS?

Washington has several museums which days to visit all of them. India has such a rich heritage but very few museums. According to the curator of the local museum, Nagpur has the best museum but has no space to expand. Old secretariat can be converted into Central India Museum. (Mr. Kinnhikar, Chairman of Heritage Committee)

RJ: The ward committee can provide the local level inputs in the development process.

MC: Nagpur does not have ward committees.

MC: The city development plan will try to capture all your ideas that you have for the city.

Q: Traffic police have to face the consequences of poor planning. Traffic police at the receiving end from media. While planning the roads you do not think about the speed of the vehicle. No efforts taken to capture the technological developments in the automobile sector. Liquor consumption has a direct impact on traffic movements. Liquor consumption is on the rise. (Traffic Police)

Q: Solar energy and rainwater harvesting avenues to be explored.

Q: DoT has decided on copper and OFC – Laying of cables will be required – we would require digging of major roads in the city. Funds are limited so can NURM fund our requirements. Last mile linkages will require permission from NMC. (BSNL)

MC: Can we visualise our city with every household given a net connection on demand?

Q: We are willing to provide inputs water supply, wastewater and waste management. (NEERI)

Q: Only 200 buses run on Nagpur city compared to 500 in Pune. We need more buses. (MSRTC)

Q: Vehicle growth has been 7% per annum. Public transport is not growing. As city grows personal vehicles will increase leading to congestion and environmental problems. (RTO)

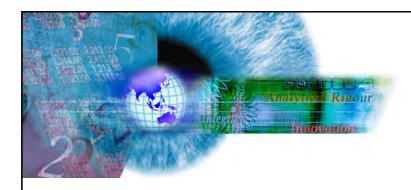
RJ: (responding to a written question on environment and creation of water bodies and problem of idol immersion) Rejuvenation of lakes and water bodies can form of NURM. Storm water drainage to recharge ground water/ water bodies. Only these schemes will form part of NURM.

Q: Satellite townships development and NURM

RJ: The cities should not try to stop in-migration but focus more on creating opportunities for economic growth.

I. Presentation A

Introductory presentations made during capacity building sessions



City Development Plan - Nagpur

A city of your vision

January 17th, 2006

Structure of presentation

- Jawaharlal Nehru National Urban Renewal Mission (JNNURM)
- Approach and Methodology of the City Development Plan (CDP)
- Your role in the process
- Process of defining the VISION for your city



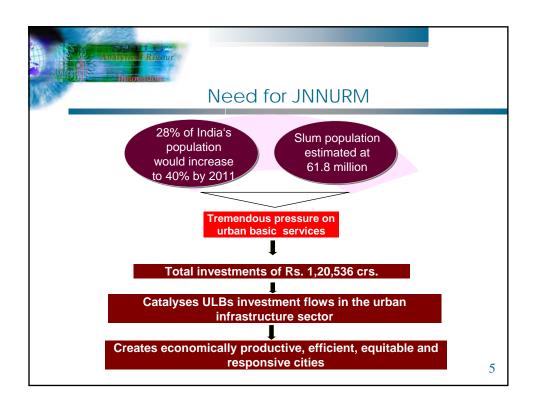
Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

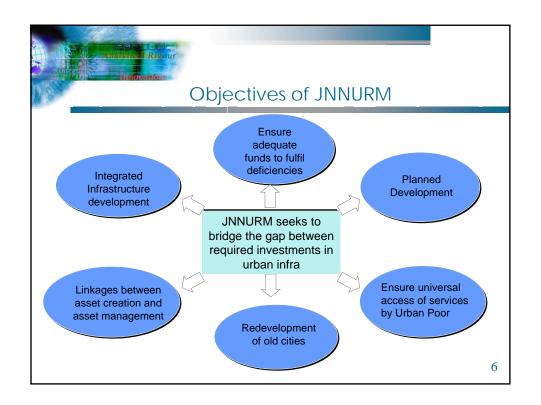
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About JNNURM –Funding by GOI

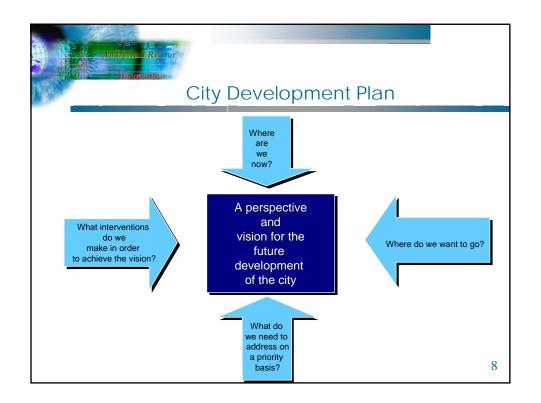
- > Envisages a consultative process for Visioning
- > Funding on a first come first serve basis
- Performance based giving weightage to the soundness of the project
- > Demand driven approach and being monitored by experts
- Tri-partite MoA MoUD, GoM and NMC
- > The applicant of the fund can only be a municipal corporation

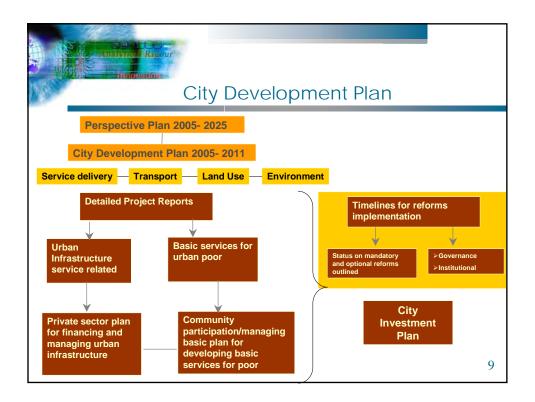
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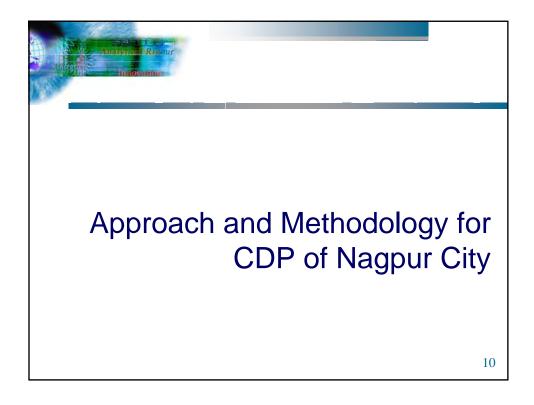


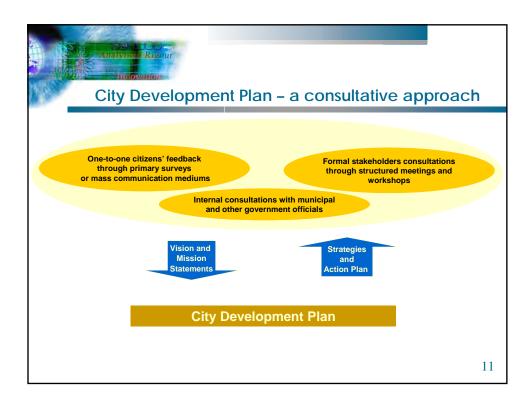


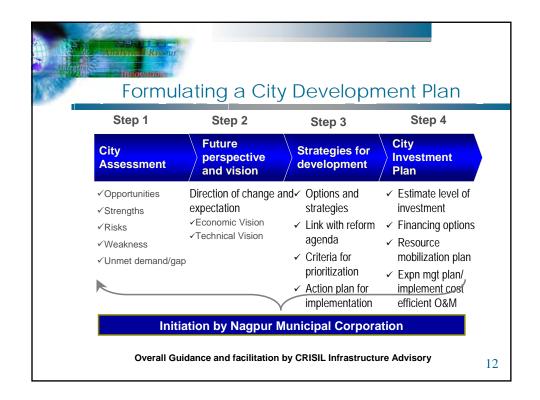
Key	Reform Outcome & F	Responsibilities
Desired Outcome	ULB Responsibilities	State Responsibilities
Financially self- sustainable cities	Revenue Improvements GIS and MIS	Devolve revenue sources Transparent, predictable framework for IG transfers
Well functioning, efficient and equitable urban land market	Professionalise property mgmt Simplify rezoning, construction Computerize land titles	Repeal ULCRA Reform Rent Control Act Rationalize stamp duty Devolve land management
Transparent accountable governance and service delivery	Introduce Area Sabhas and Ward Committees Publish Performance Reports Introduce service scorecards Monitor service quality	Public disclosure law Community participation law

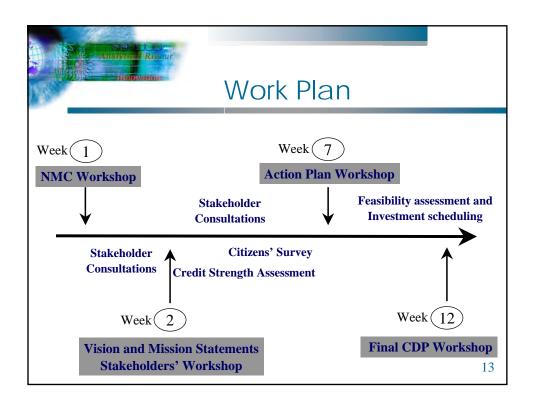










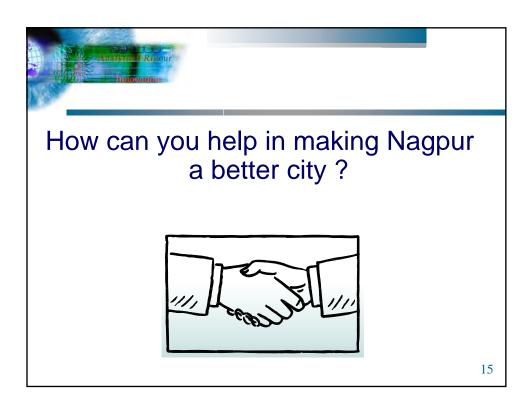


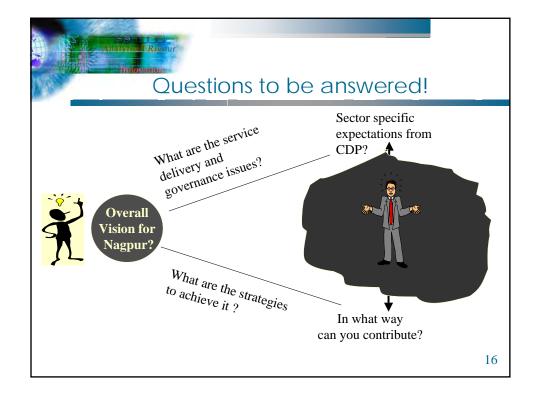
CDP experiences from other cities

⇒ CDP in Pune and Vadodara

- → Municipal and other government officials consulted for their vision and mission for the city (MC workshop)
- → Stakeholders identified to represent a wide section of the society*, One-to-one interviews conducted with stakeholders to gain their perspectives on city's vision
- → Assimilation of views from both to define a common VISION FOR THE CITY
- → Prioritizing action areas in progress

*NGOs, educational institutions, business groups, industrial associations, eminent citizens







- Preparation of CDP needs your participation
- ⇒ CDP is YOUR (NMC's) Plan
- ⇒ NMC has to
 - → Articulate their vision for the city
 - → Identify the focus areas (economic sectors)
 - → Identify the stakeholders
 - → Articulate the mission statements for each of the focus areas
 - → How NMC can support the city in achieving its vision
 - → Strategy for additional resource mobilization
- ⇒ Issues related to other Municipal services also need to be included (Fire, Health, Education)

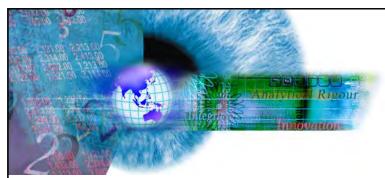
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Agenda for the next workshop

- **○** What is your vision for the City of Nagpur?
- What is your city level vision for your sector/ service? What should be the yearly milestone to achieve this vision?
- What are the strengths and weaknesses of your sector/ service?
- What are the potential areas of growth/development/improvement?
- What do you think are the main limitations/ impediments to achieve your vision?

Scope for conflict with other sectors

18



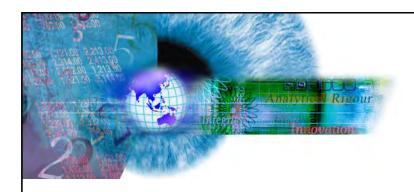
Thank You

We are open to your questions and suggestions

Contact Details:

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www.crisil.com



City Development Plan - Nagpur

A city of your vision

January 2006



ESSAY ON

- **⇒WHAT DO I LIKE ABOUT NAGPUR?**
- **SWHAT I DISLIKE ABOUT NAGPUR?**
- ⇒I DREAM ABOUT NAGPUR AS..

II. Presentation B

Presentations made by NMC officials on visioning workshop held on $23^{\rm rd}$ Jan 2006

Development plan of Nagpur City (2006-2031) -Education

History

Today Nagpur city is reached to tope priority in peculiar methods of education. There were very few schools in 60-70 decade, private educational institutions were rare at that time. Most probably education was provided by Nagpur Corporation. After then this educational responsibility was game to Zilla Parishad also. Meanwhile private educational Institutions came in existence. As the population increased, the number of students also increased.

Simultaneously number of schools are increased. Schools come in existence as granted, non-granted and government recognized etc. Recently the schools lice central school, Public school are dominant due to CBSE pattern. Educational facilities are provided as per the needs of students.

Today all types of educational facilities are available in this city i.e. higher education, Technology, Medical sciences, Engineering etc. Nagpur is glorious city having Gurukul a school of Vedas, Bhansala Military school, Delhi Public School etc. Due to these peculiarities students from other countries come here to learn.

Present Status-

As per census of 2001, the total population of Nagpur city is 20,51,320. Out of 20,51,320 males are 10,58,692 and females 9,92,658. 2,41,605 children belongs 0-6 age-group and approximately 2,58,395 children includes in 6 to 20 age-group.

From the aforesaid data the total strength of children having 0-20 age-group is 50,00,000 . Out of these five lacs of children 197,544 are taking primary education from 659 schools. 2,17,023 students are taking secondary education from 396 secondary schools, 45,796 students are learning in 140 Higher secondary schools 70,508 students are learning in 385 junior colleges 1250 students of medical sciences are learning in 12 medical colleges whereas 3192 students are completing their education in 15 engineering colleges.

Issues

Recently vocational courses like MCVC have been launched in Junior colleges. The purpose behind it to improve the standard of education among the students, to cultivate their social status and enable them to stand on their own feet. Inclusive syllabus of every branch , every subject, every field have been launched . Several colleges like medical, engineering, B.Ed etc. have been opened with like medical, engineering , B.Ed. etc. have been opened with the affiliation to Nagpur University No need to go outside for higher education.

Implementation with a rapid on rush of Sarva Shksha Abhiyan is going on for Primary education Incessantly efforts are made to get education to every students belonging to 6-14 age group . If any students is unable to go in the school, the school is reached to him directly. Alternative educational facilities are brought into existence like Mahatma Fuley Hami Yojana , Setu Shala etc. Inclusive educational facility is provided to disabled or 6-18 age group well educated teaching staff is available to get quality education Primary needs are fully provided to students. In additional to this teaching aids, and educational instruments are given to primary section

Well furnished Laboratories, computer education are available in secondary schools, But some schools are exceptional to this issue. No medical university is available in the city even today. Hence the students go out of the city for medical entrance formalities

Vision

This city will be able to provide maximum educational facilities by foresight thinking and well planning. Today the growth of population is 3% to 4% per year and 30% per decade. Nagpur city is expanding all over east-west, north-south. Alternatively there is a increase in number of students. There is a probability to increase 30% students per decade. Hence there is a need to plan so as to provide educational facilities. In the year 2001 the number of students was 5,00,000.

In the year 2011 it will be increased by 30%. It means that the number will be reached up to 6,57,544. Today there are 659 primary schools. Considering expected growth or students, 859 primary schools will be needed. Some proportion will remain for the year 2021 and 2031. As per the growth students, there will be need to increase, the number of primary schools secondary schools junior and senior colleges, Medical and Engineering colleges.

The data regarding to this is as follows.

Primary Schools.

Year	Students	Schools	Expected Expenditure
2001	197544	659	-
2011	2575544	859	-
2021	317544	1059	-
2031	377544	1259	-

Secondary Schools

Year	Students	Schools	Expected Expenditure
2001	217023	396	-
2011	282136	515	-
2021	347237	634	-
2031	412344	652	-

Junior Colleges

Year	Students	Schools	Expected Expenditure
2001	45796	140	-
2011	59535	182	-
2021	73274	224	-
2031	86913	265	-

Senior Colleges

Year	Students	Schools	Expected Expenditure
2001	3192	15	-
2011	4150	20	-
2021	5108	24	-
2031	6066	29	-

There will be need of schools and colleges, according to 30% growth of student per decade .

- 1. Entire Literacy Programme year 2006-2011
- 2. Computer Education
- 3. Will furnished laboratories and Libraries for primary and secondary schools. Year 2006-2021.
- 4. Medical University, science centers planetarium, museums. Year 2011-2021.
 5. International Play ground and Stadium year 2021- 2031.



ESTATE DEPARTMENT

ESTATE DEPARTMENT, NAGPUR MUNICIPAL CORPORATION NAGPUR

NAGPUR CITY IN BRIEF

Nagpur	Popularly Known as Orange City.
	Second Capital of Maharashtra State
Area	217.56 Sq.Km.
Population	25 Lakhs



EXISTING LAND USE PATTERN

No.	Major land use	Area (Ha)	% of Developed area	% of total area
1	Residential	3500	41.966	16.08
2	Commercial	185	2.218	0.85
3	Industrial	225	2.697	1.03
4	Public purpose	2100	35.179	9.66
5	Roads	555	6.654	2.55
6	Railway	440	5.275	2.03
7	Airport	525	6.294	2.42
8	Garden & Play ground	150	1.798	0.69
9	Developable vacant land	660	7.919	3.03
	Total (1 to 9)	8340	100%	38.34%
10	Agriculture	8000	-	36.78
11	Forest	225	-	1.03
12	Water tank	456	-	2.09
13	Nallas	380	-	1.74
14	Non developable vacant land	4355	=	20.02
	Total (10 to 14)	13,316		61.66%
	Total: (1 to 14)	21,756	100%	100

LAND RELATED ISSUE

- Land Acquisition.
- Possession of D. P. reservation land should be possession of N. M. C.
- Clearance of Title of land. To up date Land Record.
- Handing over layout with open spaces & P. U. (N.I.T. & Private Layout)
- To make Land available for various projects of N. M. C.
- Octroi Nakas,
- Treatment plant
- Reservoir (E.S.R./ G.S.R.)
- Hawkers zone, Markets, Parking lots, School, Hospital, Garden, Community Hall, Staff Colony etc.

PROBLEMS

- Framing of land disposal Rule/Policy.
- Insufficient trained staff.
- Non availability of modern facilities with infrastructure.
- Non co-ordination between various Govt. Department, such as N.I.T., Collector, Housing Board, National Highway, P.W. D. & Police.
- Up-dating of records.
- Land acquisition Problems, such as variation in land use, encroachments, un-clear title, etc.
- Political interference in day-to-day work.
- In layout of N.I.T. roads land is handed-over but open spaces & P.U. land is not handed-over, some P.U. land are already disposed off.
- D. P. reservations land are not in possession of N. M. C., there are some encroachment on this land or not handed- over to N. M. C.
- Special land acquisition officer, Law officer is not available.

MAJOR VISION

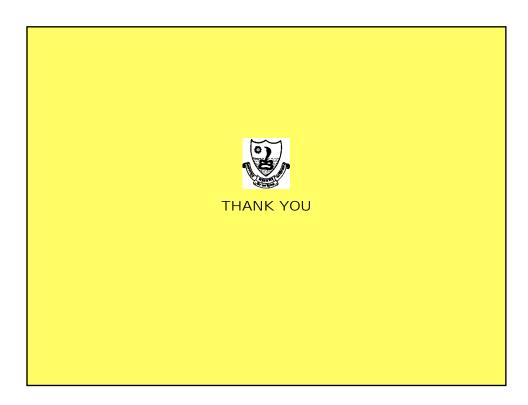
- Extension of N.M.C. limits up to the year 2011 & 2025.
- Clearance of Titles of lands.
- D.P. reservation land should be acquired and developed.
- All Lease hold plots should be renewed and yearly demand should be raised.
- Lease policy as per new D.P.
- All N.M.C. leases should be given by one department (Estate).
- N.M.C. Land, such as open spaces, P.U. Land should be developed as lawn, community hall,
 Mangal-Karalaya, for commercial purpose.
- NMC 's School, building which are vacant and not in used of NMC should be given on lease to other eligible school or institute.
- NMC's Mayor's Bungalow, Commissioner's Bungalow, Staff quarters / colony should be developed.
- Various project's on NMC's land such as Auditorium, Market, Swimming Tank, Multiplex, etc.
- NMC's Hawker zone / Chat-Chaupati etc, should be developed.

STEPS NEEDED

- Extension of N.M.C. limits Planning authority shall fix the limit.
- For Title clearance Sufficient staff, finance and facilities should be provided.
- D.P. reservation land should be handed over to NMC by NIT, Nazul, PKV and private land should be acquired, all land should be fenced and guarded.
- For lease renewal Policy should be decided, existing lease conditions need to be changed, easy procedure.
- Lease policy as per new D.P.- should be framed as per change in use etc.
- All N.M.C. leases should be given by Estate Department, for this Market Department should be under Estate Department. Other Department should follow the procedure of lease and at final stage it should be executed by Estate Department and Ground Rent should be recovered by Estate Department.
- All NMC's open and P.U. Land should be developed on BOT basis.
- NMC 's School, building which are vacant and not in used of NMC should be given on lease to other eligible school or institute.
- NMC open land, plot, available land should be used for Mayor's Bungalow, Commissioner's Bungalow, Staff quarter / colony should be developed.
- Estate Department to give the details of available land to Project Department for various project.

REFORMS

- Computerization of Department.
- Strengthening of Department.
- Development of open and P.U. Land.
- Update of Land Record.



NAGPUR MUNICIPAL CORPORATION

GARDEN DEPARTMENT



GARDENS IN NAGPUR CITY

* TOTAL AREA OF CITY : 53737 Acres.

* AREA UNDER GARDENS : 253 Acres.

0.5 % of city area.

* TOTAL AREA REQUIRED

AS PER MRTP ACT : 1.8 % of city area.

($\,$ INCLUDING OPEN SPACE, FOREST LAND, WATER BODIES ETC.)

* TOTAL NOS. OF GARDENS : 95 NOS.

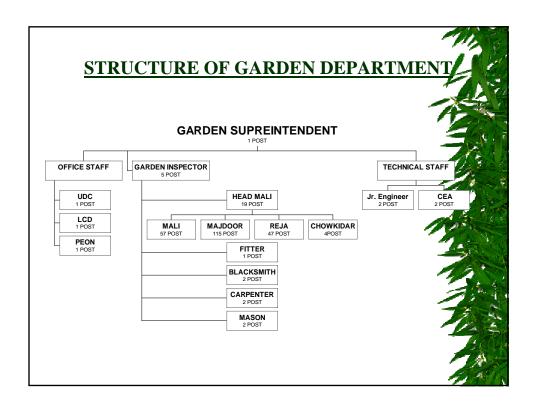
AIMS OF GARDEN DEPARTMENT

- * TO DEVELOP & MAINTAIN GARDENS, ROAD SIDES LANDSCAPES / SQUARES.
 - ✓ MAINTENANCE OF EXISTING GARDENS.
 - ✓ DEVELOP NEW GARDENS AS PER THE NORMS AND NEEDS OF THE CITIZENS.
 - ✓ TO DEVELOP & MAINTAIN LANDSCAPES/ GREENERY DEVELOPED IN THE ROAD DIVIDERS/ SQUARES/ CHANNELIZER.

* TO PERFORM THE DUTIES OF THE MAHARASHTRA (URBAN AREAS) PRESERVATION OF TREES ACT 1975.

- ✓ PLANTATION OF TREES
- ✓ PRESERVATION OF EXISTING TREES
- ✓ TO CARRY OUT TREE CENSUS AFTER EVERY FIVE YEARS.
- ✓ TO GRANT PERMISSION TO THE CITIZENS TO CUT TREES SUBJECTED TO SPECIFIC CONDITIONS ONLY.





IDENTIFIED PROBLEMS

- * WATER SCARCITY DURING SUMMER.
- * LACK OF CIVIC SENSE.
- * URBAN CONCRETE STRUCTURES INCREASING TEMPERATURE OF THE MICRO CLIMATE.
- * AIR POLLUTION DUE TO INCREASE IN VEHICULAR TRAFFIC.



FUTURE VISION

- * GARDENS ON VARIOUS THEMES SHOULD BE DEVELOPED.
- * AMUSEMENT PARKS FOR LARGER GROUPS ON BOT BASES.
- * NATURAL WATER BODIES TO BE ENCOURAGED FOR WATER SPORTS & ENTERTAINMENT.
- * CONSIDERING THE WIDTH OF THE ROAD PLANTATION OF TREES SHOUD BE DONE.
- * TO MAKE FEW SELF SUSTAINABLE GARDENS



- * SUFFICIENT FININCIAL ASSISTANCE.
- * STRENGTHENING OF THE DEPARTMENT BY PROVIDING SUFFICIENT TECHNICAL STAFF.
- * PROVISION OF Rs. 6 Crores FOR DEVLOPMENT OF EXISTING GARDENS.

SUGGESTED REFORMS

- * MAINTENANCE OF GARDEN TO PRIVATE CONTRACTORS.
- * ABOLITION OF SANCTIONPOST.(Class IV)

THANK YOU.....



NAGPUR MUNICIPAL CORPORATION

(HEALTH DEPARTMENT)



CURRENT STATUS OF HEALTH SERVICES IN CITY

The population of city of Nagpur is around 22 lakhs and it caters to the patients coming from villages around the city and even from Madhya Pradesh, Andhra Pradesh, and Chhattisgarh region. They come to the city for speciality health care.

Following is the status of health care services in the city:

A) Indoor services:

- 1. Govt. Medical College
- 2. Govt. Dental College
- 3. Govt. OTPT College
- 4. Indira Gandhi Medical College
- 5. Daga Hospital
- 6. ESIS
- 7. Govt. Ayurvedic College
- 8. Govt. Mental Hospital

B) Central Government Hospital

1. Central Railway Hospital

C) Charitable Hospitals: (N.G.O.)

- 1. Radhakrishna Hospital
- 2. Nagrik Sahakari Hospital
- 3. Dalvi Hospital
- 4. Janta Maternity Home
- 5. Matru Sewa Sangh (Sitbuldi & Mahal)
- 6. Mure Memorial Hospital
- 7. Nagpur Homeopathy College
- 8. Tirpude Hospital
- 9. Shri. Pakwasa Ayurvedic Hospital

D) Private Hospitals

- 1. Nursing Homes 750
- 2. Lata Mangeshkar Hospital
- 3. Bhau Modak Medical College
- 4. Jupiter Ayurvedic College
- 5. Nagpur Homeopathy College
- 6. Dabha Homeo Medical College
- 7. Lata Mangeshkar Dental College

E) Corporate Hospitals

- 1. Wockhardt Heart Hospital
- 2. Orange City Hospital

F) N.M.C. Indoor Hospitals - 3

- 1. Pachpaoli Maternity Home
- 2. Indira Gandhi Rugnalaya
- 3. Isolation Hospital

The total number of beds including all indoor hospitals in the city is around 7500.

- G) <u>N.M.C. Dispensaries</u>:Dispensaries and 6 Mobile Dispensaries.
- H) <u>Outdoor Clinics</u>: (3000 Private Clinics)
- I) Pathology laboratory including blood bank 67

- ➤ The population of the City is increasing day by day while the bed strength of Govt. Hospitals is more or less same. There is urgent need to expand the bed strength of these hospitals. Currently, programme for expansion and modernization of Indira Gandhi Medical college is underway.
- ➤ Since poor and B.P.L. patients go to these hospitals, It is very essential to increase bed strength of Govt. Medical College and Daga Hospital.

10 Major Problems of Health Care

▶ 40 % of the population of the city reside in the slum areas. They cannot afford private treatment because it is very costly. 49 % of the population is B.P.L. that is there monthly income is less than Rs.2000 per month.

Following are the 10 Major problems in the Health Care in slum and other population:

- 1. Lack of awareness amongst slum population.
- 2. Lack of infrastructure
- 3. Poor health status of mother and children resulting in higher infant mortality rate and increased morbidity amongst women and children.
- 4. Prevalence of communicable diseases in population.
- 5. Reproductive and Child health

- 6. Lack of potable drinking water and improper sanitation.
- 7. Higher incidence of diabetes, B.P., heart disease, etc.. in the population.
- 8. HIV / AIDS. Nearly 8 Million adult population in India suffers from HIV / AIDS. The incidence of HIV / AIDS is 1.2 % in adult population
- 9. Lack of emergency medical care (accidents and trauma care)
- 10. Health care to the elderly population.

Vision for the future:

- 1) Eradication of preventable diseases by 2011 should be the goal. gastroenteritis, cholera, jaundice, typhoid are communicable diseases which are prevalent in the city. These diseases are transmitted by water and unhygienic food. Supply of proper drinking water can eliminate the diseases. Similarly strict control and supervision on hotels road side food vendors is necessary.
- 2) Eradication of vector Control of mosquito menace by 2011 should be the target so that diseases like malaria, filaria and encephalitis can be prevented. Necessary infrastructure, manpower and scientific approach should be adopted to prevent vector borne diseases.
- 3) Control of stray / street dogs is very essential to prevent infection of Rabies.

- 4) Total Vaccination of the population as per WHO schedule should be completed by 2011 to prevent diseases like Tetanus, polio, measles, diphtheria, Tuberculosis, infective hepatitis, etc..
- 5) Control of HIV / AIDS Necessary infrastructure, manpower health finance should be provided for establishing preventive, curative and diagnostic facilities by 2011. Because in coming years HIV / AIDS is going to be a major problem.
- 6) For prevention and treatment of cancer, facilities for early diagnosis and treatment should be provided by way of regular checkup in pathology, x rays, etc..in all the 10 Zones of the city.
- 7) Diabetes, High B.P., and heart diseases can be prevented by change of life style and health awareness amongst people. Health centers should provide for regular BP checkup Blood sugar test and ECG. There should be an expert physician / doctor attach to every health facility in each zone.

- 8) City should have convention center for conducting major medical conferences and for providing health care to the population.
- 9) Consultancy medical advice should be available by way of Internet to all the population.

STEPS

- 1) Every 30,000 population should have one health facilities which gives comprehensive health care.
 - a) Fully equipped with emergency kit such 10 Ambulances for 10 zones.
 - b) A mini Lab for routine test like Malaria, Fileria, Hemoglobin, HIV/AIDS etc..
 - c) RCH facilities to be strengthened in the slum area.
 - d) There should be Epidemic control unit attached to each Health Zone.
 - e) Facility for geriatric population.
 - f) Counseling Centers for mentally challenged persons.
 - g) Counseling Centers for HIV / AIDS.

Such an integrated approach only will help in combating the emergent health scenario.

2) <u>MULTISPECIALITY HOSPITALS</u>:

Running of Speciality Hospitals is beyond reach of local bodies due to financial constraints. : NMC and Govt. should encourage Multispeciality Hospitals. The experience so far is not very encouraging with regard to BOT basis hospitals as no private partners are willing to provide this services. Hence to attract the future buyers. NMC should provide concessions in the form of affordable cost land, exemption of octroi on equipment & medicine, subsidy on water rates and taxes, etc.

3) Involvement of Doctors, IMA and NGO's in the health care of poor people. Those NGO's who are willing to work in slums should be given free land or building, water connection, Electricity, etc.. to run the Medical care on affordable basis.

IMA should motivate Doctors by giving Slogans

like " Aao Slum Chale " so that quality medical care is available to the slum population.

The future Steps towards improvement in the Health care facilities should be based on following principle:

- 1. There should not be Target oriented programme but they should be based on community needs.
- 2. There should be participatory planning in medical care.
- 3. Greater emphasis on quality health care and client satisfaction.

<u>REFORMS</u>

Emergency Care: NMC has started two Emergency Medical veins equipped with medicines for accidents and trauma. This needs to be extended in all the 10 zones.

Devadia Maternity Home, Mini mata nagar Hospital and Super Speciality Hospital on the Govt. land near medical college, are the projects which are in the pipeline.

There is a proposal for involving private Doctors by providing them with free space in the existing structure of corporation dispensaries. This will ensure quality Medical Care to the under privileged.

1 1

RCH, RNTPC, Leprosy, Malaria, Filarai, Vaccination, School Health programmes, etc.. are already run in NMC Hospital and they need to be strengthened further.

-- END --

10

NAGPUR MUNICIPAL CORPORATION

(Pench Project Cell)

REJUVENATION OF RIVERS AND LAKES

Rivers flowing through Nagpur City

- Pili River
 - ➤ Originates from Gorewada lake and meets
 - > Total length is 16.11 Kms.
 - ➤ Its width varies from 15.0 Mtrs. To 25.0 Mtrs.
 - ➤ Average Depth is 5.0 Mtrs.
- Nag River
 - ➤ Originates from Ambazri lake.
 - > Total length is 15.73 Kms.
 - ➤ Its width varies from 20.0 Mtrs. To 30.0 Mtrs.
 - > Average Depth is 6.0 Mtrs.

Lakes in Nagpur City

Sr. No.	Name of the Lake	Capacity (in Sq. Kms.)
1	Gorewada	1.01
2	Futala	0.40
3	Ambazari	1.185
4	Sonegaon	0.150
5	Sakkardara	0.105
6	Gandhisagar	0.181
7	Lendi Talao	0.045
8	Naik Talao	0.037
9	Dob Talao	0.020

Sewage Generation in Nagpur City

Year	Total sewage generation (in MLD)	Sewage Treated (in MLD)
2005	279	60
2011	323	73
2021	440	107
2031	596	153

Quantity of Sewage not collected and treated is 209 MLD.

Pollution of Rivers and Lakes

Rivers and Lakes are getting polluted due to

- Number of Sewers are directly connected to the Rivers and Lakes.
- Inadequate collection system within the City leads to pollution.
- Inadequate sewage treatment facility.
- People are disposing debris in the River.

Rejuvenation of Rivers and Lakes

- Cutting off direct sewer connections to Rivers & Lakes.
- Promoting Decentralized Waste Water Treatment Plant (DEWATTS) along the river course and near the lakes or
- Using holding capacity of the Rivers as a treatment facility. This can be thought of due to land constraints.
- As a part of rejuvenation greenery can be developed on vacant spaces.

Block Estimate of Rejuvenation of Rivers & Lakes

Cost of erection of DEWATTS plant	Rs. 10.00 Lakhs /20 M ³
Cost required for treating uncollected waste water in 2011. ({323 - 70 - 100}= 153 MLD) i.e. 153000 M ³	Rs. 765.00 Crores

- Proposal of DEWATTS seems to be costly?
- We may have to call for options from experts.

Vision

■ Water bodies to be pollution free.

EASE OUT.....!



NAGPUR MUNICIPAL CORPORATION

REJUVENATION OF RIVERS AND LAKES IN NAGPUR CITY UNDER JNNURM

Executive Engineer

Pench Project Cell

NAGPUR MUNICIPAL CORPORATION

Nagpur



NAGPUR CITY IN BRIEF

Nagpur	Popularly Known as Orange City.
	Second Capital of Maharashtra State
	Tenth among Top
Area	Ten Cities in India. 217.56 Sq.Km.
Population	23 Lakhs
Floating Population	55 to 60 Thousand





RAIN FALL IN NAGPUR CITY

Nagpur district receives Rainfall from the south-westerly Monsoon mainly in the months of June, July, August and September

July and August are the months during which the maximum rainfall as well as max. continuous rainfall occurs.

Rain fall data calculated over a period of 26 years (1970-1996).

Rainfall – (1970-1999)	Rainfall in [MM]
Total of Annual Rainfall [MM] for 26	
years.	27938.67 MM
Average Rainfall [MM]	1074.56 MM
Maximum Rainfall in a Month [MM]	559.1 MM [of July 1994]



MAJOR WATER BODIES IN NAGPUR CITY

LAKES

Sr.		Approx. normal
No		water spread
	Tanks	area
1	Gorewada	1.01 Sq. Km.
2	Futala	0.40 Sq. Km.
3	Ambazari	1.185 Sq. Km.
4	Sonegaon	0.150 Sq. Km.
5	Sakkardara	0.105 Sq. Km.
6	Gandhisagar	0.181 Sq. Km.
7	Lendi Talao	0.045 Sq. Km.
8	Naik Talao	0.037 Sq. Km.
9	Dob Talao	0.020 Sq. Km.
10	Pandrabodi	-
11	Sanjay Nagar Khadan	
12	Pardi	



MAJOR WATER BODIES IN NAGPUR CITY

STREAMS

Sr.		
No	Streams	Length in Km.
1	Pilli River	17.11 Kms.
2	Chamar Nalla	6.71 Kms.
3	Shanti Nagar (Kutte Wale Baba) Nalla	5.28 Kms.
4	Nag River	15.73 Kms.
5	Hudkeshwar Nalla	5.99 Kms.
6	Swawalambi Nagar Nalla	3.34 Kms.
7	Sahakar Nagar Nalla	4.93 Kms.



MAJOR PROBLEM AT RIVERS AND LAKES

- Major Lakes and Rivers are highly polluted due to the direct sewerage disposal in it.
- Around lakes slums are located which is also main reason for pollution.
- Deposition of silt, sewage, decomposition of solid waste results in extensive pollution of these rivers.
- Encroachment around Lakes and along the Rivers.



MAJOR VISION

- To restore and conserve the polluted and degraded lakes.
- Prevention of pollution from point source by intercepting, diverting and treating the polluted loads by entering the lakes.
- In situ measures of lake cleaning such as Desilting, Deweeding, Bioremediation etc depending upon the site conditions.
- Catchments area treatment and lakes Rejuvenation which may include bunding, fencing, creation of facilities for public recreation and entertainment (children park, Boating etc.) and Public area.
- Public awareness and public Participation.



REFORMS

- Diversion of Existing sewage Lines.
- STP at main locations.
- Rejuvenation of Nag and Pilli River.
- Pollution Control
- Restoration of Lakes.
- Enhancement of Green Belt.

Total cost for River Rejuvenation 100 Crores and Lakes Rs. 50 Crores







NAGPUR MUNICIPAL CORPORATION



MASTER PLAN OF ROADS IN NAGPUR CITY

Description

- "Orange City" Known
- Area of Nagpur = 217.56 Sq.km.
- Nagpur being center / heart of India, Connected by Airways, Roadways, Railways.
- 3 National Highways passes through the City (No. 6,7,69),
- City Surrounded by Inner Ring Road admeasuring 41.48 Kms. Whereas outer Ring Road is 84.00 Kms.

CURRENT STATUS

EXISTING ROAD NETWORK IN NAGPUR CITY

• 1. Municipal Roads = 1467.89 Km

• 2. P.W.D. Roads = 124.45 Km

Total :- 1592.34 Km

C.C.Roads
211.85 Km

B.T.
1266.24

W.B.M.
i.e.murrum
11.40

THE TYPICAL CONDITION OF THE EARLIER ROADS

- Narrow Roads, less carriageway (width), No storm water drain, No footpath for pedestrian, Inadequate street lighting, Improper signage system, In proper Geometric Planning, No comprehensive planning of roads.
- For Development of existing Roads, City has launched two schemes i.e. IRDP, CRIP to envisaged the demand of public in view of traffic congestion, consisting of the following parameters.

I.R.D.P.

- (1) Road work = 186.00 Km costing 193.00 crores
- (2) R.O.B. 8 Nos.
 (Santra Market, Kalamana Market, Itwari, Maskasath,
 Mangalwari, Mankapur, Mehadibagh Masksath)

103.00 Crores

- (3) R.U.B. 1 No. (Mominpura)
- (4) Fly Over 2 Nos. = 22.00 Crores (Sakkardara + Umred Road Completed)
- (5) Minor Bridges 3 Nos. = 7.60 Crores.
- (6) Total Plaza 5 Nos. = 5.00 Crores.
- (7) Utility Services 20.00 Crores.

350.00 Crores.

- Out of 186 Km. Road length, 184 Km, Road length has been dealt by NMC, NIT, PWD organization.
- Completed flyovers 3 Nos out of 8. Rest 5 requires fund amounting to Rs. 65.00 Crores approx.
- Loan share be refunded to MSRDC i.e. 154.00 Crores.

CRIP ROADS

- NMC has undertaken 52 Km. Roads costing 84.00 Crores. Out of which, works amounting to Rs. 48.00 Crores has been consumed, Now NMC is taking the scheme as NRIP.
- RING ROADS :-Inner Ring Road
- (A) 41.84 Km. road length is completed by PWD Deptt.

- (B) <u>Outer Ring Road</u> Consists of 4 ROB's, 6 Flyovers, 6 Major Bridges, 32 Minor Bridges, 84 Kms. 6 lanes road costing to Rs. 705.00 Crores. Out of 84.00 Kms. road length, only 22.00 Km. road of two lanes amounting to Rs. 34.00 Crores is being tackled.
- (C) LAND ACQUISION :- For Outer Ring Road require 1 year.

DEVELOPMENT OF 572 /1900 LAYOUTS BY N.I.T.

- (A) <u>572 Layouts</u>:-Roads, Sewers, Storm Drain, Water Supply Development requires = 200 Crores.
- Recovery Uptill dated = 120.00 Crores

Shortfall of 80.00 Crores.

(B) 1900 Layout :-

• Development Cost = 500.00 Crores

• Uptill Recovered = 70.00 Crores

• Will recover more = 200.00 Crores

• Requirement = 500 - (200+70) = 230 Crores.

 People participation in Developing these layouts is less. For Balance of 230 Crores, NIT has to borne.

PROBLEMS IN THE SECTOR / CITY

- Non co-ordination of various department involved while planning and developing.
- Land Acquisition
- Removal of Encroachments.
- Legal Litigation.
- Political Interference
- Haphazard Planning / In-comprehensive Planning

PROBLEMS IN THE SECTOR / CITY

- Shifting of various Utility services to be included in cost which is not possible due to economic constraints.
- Insufficient staff and inadequate working facilities.
- Lack of Design and Planning Cell.
- Lack of Working Environment
- Lack of proper system for Record Keeping

PROBLEMS IN THE SECTOR / CITY

- Working Pattern is not according to duty list of Engineer's especially i.e. Engagement in Non Technical works.
- Creation of Hurdles by Anti Social elements like interference, theft etc.
- Lack of Public Awareness.

PROPOSALS / DEMAND

- (A) IRDP Scheme :-
- Requirements against Cost of construction of roads for balance works like ROB, RUB and other services - 150.00 Crores.

NRIP SCHEMES

S.No.	Width of Roads in meters	Length of Roads in Kms.	Cost in Crores including all Services.
1	30.00	6.69	18.06
2.	24.00	34.95	76.89
3	18.00	58.86	94.18
4.	15.00	24.12	33.77
	Total	124.62	222.90
	For Land Acquisition	1	7.10
	G. Total		230.00

Outer Ring Roads:-

Road length Coverage -- 300.00 Crores

• 6 Fly Overs -- 200.00 Crores

• 3 R.O.B. -- 150.00 Crores

• 6 Major Bridges -- 50.00 Crores

• 32 Minor Bridges -- 30.00 Crores

730.00 Crores.

 Addl. for Gumgaon - Salai - Dhabha Road leading to M.I.D.C.-- 9 Kms.-- 50.00 Crores.

Total :- 780.00 Crores.

Metro Region Improvement Scheme by N.I.T.

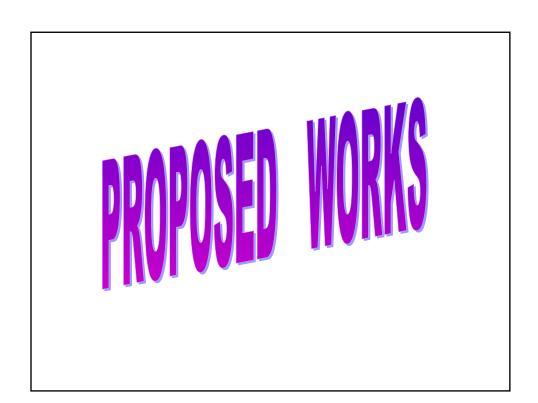
S.No.	Name of the Scheme	Length of Road in Kms.	Cost in Crores.
1.	Besa-Beltarodi Improvement Scheme	40.80	17.00
2.	Bhilgaon-Khairi Improvement Scheme	56.75	23.44
3.	Bhokara-Godhani Improvement Scheme	95.26	41.37
4.	Yerkheda-Ranala Improvement Scheme	22.81	8.52
5.	Kharbi-Godhani Narsala Scheme	80.56	34.00
6.	Shankarpur-Gotad Improvement Scheme	94.50	36.82
	Total	390.68	161.15

E) D.P. Plan Roads (List Supplied by N.I.T.) in 572/1900 Layouts.

S.No.	Width of Roads in Mtrs.	Length in Kms.	Cost in Crores.
1.	30.00	6.90	19.01
2.	24.00	9.10	20.11
3.	18.00	27.20	43.32
4.	15.00	1.50	2.70
5.	12.00	14.10	19.20
	Total	58.80	104.26

F) Untackled D.P. Road Proposed by N.M.C. (87.65 - 58.80 = 28.85 Kms.) @2.20 Crores/Kms. = Rs. 63.47

Total : **Rs. 167.73**



1 (

FLYOVERS

S.N.	Name	Amount in Crores
1)	Flyover @ Ram Mandir Rly Over Bridge to Wardhman Rly X-ing on C.A. Road.	250.00
2)	Liberty Cinema to Anjuman Complex	50.00
3)	Wadi Naka Junction point connecting Ring Road and Amravati Road	100.00
4)	Automotive Square @ Ring Road and Kampte Road, Junction Point	20.00
5)	Fly over on Bhandara Road and Ring Road Junction @ Gomati Hotel	20.00
6)	Fly over From L.I.C. Square to Gurudwara – Kamptee Road.	50.00
7)	Fly Over @ Matey Square	20.00

8)	Fly over @ Ring Road and Nara Junction	10.00
9)	Fly over @ Ring Ring Road and Nari Junction	10.00
10)	Fly over from Devi Mandir to Pratap Nagar Police Station	20.00
11)	Khamla Road @ Sawarkar Nagar Square	20.00
12)	Ring Road & Chhindwara Road Junction near Mankapur	10.00
13)	Flyover @ Manewada Square and Ring Road Junction	10.00
14)	Hudkeshwar & Ring Road Junction	10.00
15)	Ring Road and Katol Road Junction	10.00
	Total	610.00

R.O.B.

S.N	Name	Amount in Crores
1)	Somalwada Rly X-ing R.O.B. Leading Manish Nagar	10.00
2)	R.O.B @ Jaripatka Centenary	10.00
3)	R.O.B. @ Ajni Square	50.00
4)	R.O.B. @ Ambedkar Road (Parallel Addl. Lane)	50.00
5)	Wardha Road near Chinchbhuwan (Parallel Lane)	40.00
	Total	160.00

R.U.B.

S.N.	Name	Amount in Crores
1)	Near Anand Talkies i.e. Govt. Technical Institute to Ghat Road	15.00
2)	Kamptee Road Near Gurudwara	10.00
3)	Kamptee Road Near Uppalwadi	10.00
	Total	35.00

S.N.	Name	Amount in Crores
1)	Near Variety Square – Sitabuldi	
2)	Near Baidyanath Square	
3)	Near Agyaram Chowk	
4)	@ Indora Square	0.10.00
5)	@ Sakkardara Square	9x10 = 90
6)	@ Vaishnodevi Square	
7)	@ Laxmibhawan Square	
8)	@ Mhalginagar Square	

Parking Plaza

Keeping in view the increasing vehicular population of the City day-by-day, Corporation and the other Organization of the City, decided to go in for "Parking Plaza's" at the prominent Location on following places.

1 ′

1) Variety Square, Sitabuldi on 5000 Sq.ft. Plot.

Construction Cost: Rs. 2.18 Crores. Land Cost : Rs. 2.00 Crores

(owned by N.I.T.)

Total : Rs. 4.18 Crores.

NIT's Proposal of 55 Cars. i.e. 2.18/55 = Say Rs. 4.00 Lakhs / Car.

- 2) Gandhibagh Near Local Bus Stand : i.e. North East Corner of Gandhibagh Garden
- 3) Dosar Vaishya Bhawan Square / Near Police Chowki
- 4) Near Skylark Hotel

Total Cost Reqd. :4x4.00 = 16.00 Crores.

NMC'S PARKING PLAZA

- 1) Near Yeshwant Stadium
- 2) Gokulpeth Market
- 3) C.A. Road. : 2 Nos.

Total Cost Reqd. : 4x5.00 = 20.00 Crores.

G. Total Reqd. : 36.00 Crores.

1

Transport Plaza

- 1) Wardha Road
- 2) Amravati Road
- 3) Bhandara Road

Total Cost Reqd. :3x100.00 = 300.00 Crores.

	Abstract of De	ma	ınd
A)	IRDP Works (ROBs & Bridges)		150.00
B)	NRIP Works (124.62 Kms)		230.00
C)	Outer Ring Roads (84 Kms)	••	780.00
D)	Metro Region		
	Improvement Scheme (390.68 Kms)		161.15
E)	D.P. Plan Road (87.65 Kms)		167.73
F)	Fly over (15 Nos)		610.00
G)	ROB (5 Nos)		160.00
H)	RUB (3 Nos)	••	35.00
(J	Sub Ways (9 Nos)	••	90.00
T)	Parking Plaza (8 Nos)	••	36.00
K)	Transport Plaza (3 Nos)	••	300.00
L)	Storm Water Drains (160 Km for 9 to 12 mt	r. Rd.)	45.00
M)	Major Nallah Walls (102 Kms.)	••	55.50
N)	Strengthening of existing nallah walls	••	45.00
(O)	A.T.S. Converted in L.E.D.	••	10.00
P)	Traffic Signals & Blinkers	••	10.00
Q)	Junction Development	••	25.00
R)	Hawker Zones	••	10.00
	Total		2919.88
	Say Rs.		2920.00 Crores

14

Kind of Vision

- 1) Master Plan be framed keeping all the view / constraints in mind like population growth in Future etc.
- 2) City Should be fully developed (keeping in view the increasing population day-by-day) in all sense like Infrastructure development:

Infrastructure Development

- 1. Self Housing / Accommodation facility.
- 2. Job opportunity / Employment Generation.
- 3. Education facility
- 4. Transportation / Conveyance facility with Plazas
- 5. Market facility and Parking facilities
- 6. Sports and Recreation facility
- 7. Medical facility
- 8. Industries, business and Pollution free city.
- 9. All service facilities like, smooth Roads, sewers, Drains, 24 Hrs. Water supply, Electrification to Roads, Street furnishing to Roads (Signals), Gardens, Good Environments
- 10. Amusement Parks, Bus Bays, Night Shelters to beggars, Vruddhashram (Home for Aged), Fast local / Rapid transport, Footpath for pedestrian and disabled people, Crèche.
- 11. Hawker facility / Zones.
- 12. Amphitheater, Aquarium, Auditorium



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NAGPUR MUNICIPAL CORPORATION

(Pench Project Cell)

MASTER PLAN OF
SEWERAGE SYSTEM FORNAGPUR CITY
WITH SPECIAL EMPHASIS ON
NORTH SEWERAGE ZONE (NSZ)

Historical Background of the Nagpur City

- Mr. Lane Brown designed Sewerage Scheme in 1910.
- It was executed from 1922 to 1943.
- In 1943 NIT prepared Sewerage Scheme for Old Nagpur City.
- It was installed in the year 1964.
- Thereafter NMC made additions and alterations to the Sewerage System.

Salient Features

- Nagpur City is divided into three Sewerage Zones namely North Sewerage Zone (NSZ), Central Sewerage Zone (CSZ) and South Sewerage Zone (SSZ) based on topography.
- Slopes from west to east in general.
- The Nagpur Sewerage System consists mainly of Gravity Sewers.
- Its having one Seweage Treatment Plant (Based on ASP) at Bhandewadi.

Contd.....

Salient Features

- 60 % of the area is having Sewerage Network.
- 70 % of the population gets benefit of Sewerage Network.
- Length of the Sewer Lines is 1100 Kms. (Approx.)
- Dia. of main Sewers ranges from 225 mm to 1800 mm.

Sewage Generation in Nagpur City

Year	Total sewage generation (in MLD)	Sewage generation in NSZ (in MLD)
2005	279	60
2011	323	73
2021	440	107
2031	596	153

Problems associated with Existing System

- Collection system is not adequate.
- Sewer Lines get chocked frequently.
- Man-Holes get filled with Solid-Waste.
- Raw Sewage is connected to natural streams.
- Inadequate sewage treatment facility in CSZ.
- No sewage treatment facility in NSZ & SSZ.
- Piecemeal approach to solve the problem.

Amount required for Sewerage Schemes.

Zone	2021 (in Rs. Crores)	2031 (in Rs. Crores)	Total (in Rs. Crores)
NSZ	129.84	192.06	321.90
CSZ	238.91	326.69	565.60
SSZ	146.73	225.62	327.35
Total	515.49	744.36	1259.85

North Sewerage Zone on Priority – Reasons

- Urban poor are mostly concentrated in NSZ.
- 50 % of the area is unsewered and without toilets.
- Large number of population use open defecation.
- This leads to unhygienic conditions in the area.
- Ground water is polluted.
- Polluted water complaints on very large scale.

Proposed Sewerage Scheme for NSZ

- DPR is prepared for development of Sewerage System in North Zone of Nagpur City covering 217.56 Sq. Kms. under the jurisdiction of NMC.
- The proposed scheme for this system is the part of the long term 30 years perspective planning for the Sewerage System for Nagpur City.
- The cost of the proposed system for the North Zone is estimated as Rs. 129.84 Crores.

Design Parameters

Project Components

Vision

- Provide sewerage facility to densely populated urban poor areas in the City.
- Curb unhygienic sanitation practices.
- Prevent pollution of ground water and natural bodies.
- Promote reuse of Waste-Water for power plants.
- Frame Waste-Water Reuse Policy and implement the same at State and National level.







NAGPUR CITY DEVELOPMENT PLAN

SLUM DEVELOPMENT

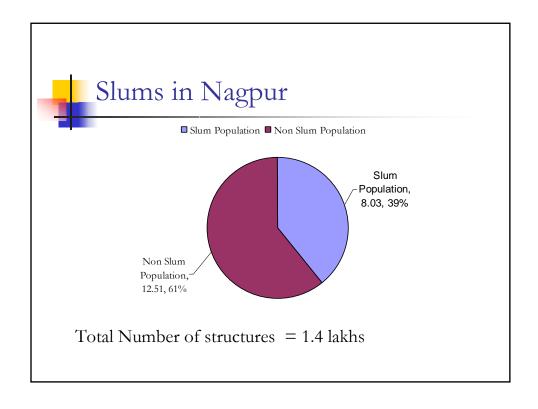




NAGPUR CITY PROFILE

- Located at the geographical centre of India
- Second Capital of Maharashtra
- Second Greenest City in the country
- Known as Orange City
- One of the largest Industrial Estates (approx. 6000 hectares) in Asia at Butibori
- Nagpur Airport has been upgraded as an international airport and a cargo has been planned
- Rich in resources such as minerals, water and electricity (coal) and skilled manpower

STATUS OF SLUMS IN NAGPUR





Slum Status					
Notified	289				
Nouned	209				
Non- notified	135				
Total Slums	424				

Slum Population Status				
Notified Slum				
Population	648,447			
Non-notified				
Slum				
Population	155,424			
Total Slum Population	803,871			
1 opulation	003,071			

Slums -

Slums – Land Ownership Patterns

Slums on	No. of Slums
Government Land	85
NMC Land	8
NIT Land	52
Private Land	81
Mixed Use Land	174
Other Land	24
Total	424

EXISTING SLUM DEVELOPMENT SCHEMES



NATIONAL SLUM DEVLOPMENT PROJECT

- Provision of Basic Social and Physical Amenities for the Poor
- In 2000-01, 19 works completed amounting Rs6.34 crores
- In 2001-02, 16 works completed amounting to Rs2.60 crores
- In 2002-03, 3 works completed amounting to Rs1.43 crores
- Five works under progress



Low Cost Sanitation Programme

■Total 8,113 latrines constructed by NMC at a cost of Rs.3.98 crores

Urban Sanitation Programme for Nagpur

 Pay and Use Toilets at 46 locations at a cost of Rs. 3.65 crores



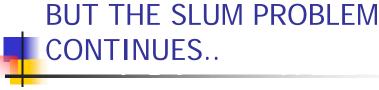
Lok Awas Yojana

- Sponsored by Maharashtra State Government
- Total 379 houses were constructed by dwellers themselves in 16 slums and 21 dwelling units are under construction
- Total Rs68.97 lakhs has been released



VAMBAY – Valmiki Ambedkar Malin Basti Awas Yojana

- Jointly sponsored by Central and State Government (50% share each)
- 184 sq ft built up area provided at a cost of around Rs50,000 per unit
- Total 1,292 houses constructed at Nari Layout (Dixit Nagar) and 386 houses constructed at Chikhli at a cost of Rs8.44 crores





Evaluation of Past Schemes

- Past schemes focused on provision of physical infrastructure without taking the views of the slum dwelling community
- > So amenities provided were unattended as the users were not taken into confidence



WHAT DO WE DO NEXT?

Solution to the Continuing Problem



- SRA Scheme to be implemented
 - Good and Pucca Houses to every eligible slum dwellers
 - Now focus will be on involving communities in planning and thereby creating a sense of ownership within slum dwellers
- Self-sustaining model Public Private Partnership

Vision Statement for Slums in Nagpur



A City without Slums in the next decade

Benefits for Nagpur Through SRA



- Housing and Health Benefits
- ncome
- Knowledge
- Environment
- Socio-Cultural

Housing for EWS and LIG In The Future



- Rs20 crores spent for EWS and Rs 25 crores on LIG for construction of houses by Nagpur Improvement Trust
- In future, Rs80 crores each for EWS and LIG will be spent by NIT for construction of houses
- MHADA is also planning to construct 2000 houses for EWS amounting to Rs20 crores and 2000 houses for LIG amounting to Rs22 crores in next 15 years





NAGPUR MUNICIPAL CORPORATION

SECTOR - STORM DRAIN

- SIGNIFICANCE :- Need for Storm Water Drainage is purely a result of Modern Urban Growth. With houses, roads, footpath etc. coming up, the permeable area get reduced and rain water starts logging up. Storm Water Drainage service is necessary to avoid water logging and resultant breakage of roads.
- The necessity of Storm Water Drain depends on the climatic conditions i.e. incidence of rainfall and natural drainage (Water shed and topography)

PRESENT SCENARIO

- Area of Nagpur City is 217.56 Sq.Km.
- The city gets rainfall from South-West monsoon which sets in June and lasts till September
- The annual average rainfall is about 1200 mm
- Nagpur City has a very good natural Drainage Pattern.
- Nagpur City has a very good topographical Condition having natural gradient in one direction i.e. from West to East.

Nagpur City has Two Major Storm Water carrying Streams.

- <u>Nag River</u>:-Starts from Ambazari Lake's over flow weir at Western end of the City and run through the Middle of the City to the Eastern Part of the City.
- Nag River Caters the storm drainage of West Nagpur (Part), South Nagpur, Central Nagpur, East Nagpur.
- Total Length of Nag River is 17.00 Km. and width ranges from 12 to 40 m and depth varies from 2 to 4.5 M.

• PILI RIVER --

- Starts from waste weir of Gorewada at North - West end of the City and run through the Northern Part of the City to Eastern end of the city.
- Pili River Caters the storm drainage of West Nagpur (Part), North Nagpur.
- Total Length of Pili River is 16.00 Km.

IMPORTANT NALLAHS OF THE CITY

- There are other Important connecting Nallah running along and across the City connected to Nag River and Pili River.
- Dudh Nallah
- · Patrakar Colony Nallah
- Sahakar Nagar Nallah
- Swawlambi Nagar Nallah
- Trimurti Nagar Nallah
- Jammudeep Nallah
- Manewada Nallah
- Boriyapura Phule Market Nallah
- Shanti Nagar Nallah
- · Chandan Nagar Nallah
- Hasanbagh Nallah
- Hatti Nallah
- Wathoda Nallah
- Noga Factory Nallah
- Satti Nallah
- Pardi Nallh

ZONE WISE LENGTH OF OPEN NATURAL NALLAHS IN THE CITY.

ZONE NO.	LENGTH (IN KM)			
Zone No.1	6.20			
Zone No.2	3.85			
Zone No.3	10.80			
Zone No.4	11.04			
Zone No.5	7.00			
Zone No.6	6.42			
Zone No.7	8.76			
Zone No.8	20.98			
Zone No.9	11.56			
Zone No.10	10.74			
TOTAL :-	97.35			
Area covered by Nallah 380 Hect.				

DETAILS OF STORM DRAINS IN THE CITY.

DRAIN TYPE		ZONES DRAIN LENGTH IN KM.					TOTAL				
	1	П	III	IV	V	VI	VII	VIII	IX	Х	TOTAL
OPEN DRAINS -PUCCA	0.75	14.27	32.08	6.85	4.56	12.81	6.68	0	4.97	5.40	88.38
OPEN DRAINS - KUTCHA	0	25.64	10.30	0	0	0	0.8	0	0	7.65	43.79
CLOSED DRAINS	99.75	14.43	39.28	57.10	79.50	77.32	39.01	70.70	66.46	81.78	625.33
TOTAL :-	100.50	54.36	81.65	63.95	84.06	90.13	46.49	70.70	71.43	94.83	757.52

PROBLEM AREA

- At present approx. 30-35 % of the Road Network is covered by storm water drainage system of Open drain and closed drains.
- Almost all storm water Nallah at Present carrying storm water as well as sewer flow.
- In the monsoon, there are problems of back flow in the sewers that lead to unhygienic conditions and outburst of Epidemic.

- Silting and Deposition of Garbage in the stream / Nallah
- N.M.C. has recently constructed IRDP road network and alongside drain network which allow the runoff to reach the Nallah and River at rapid pace and now if there is a persistent rain for 24-48 hrs., there is likelihood of overflowing of Nag River and Pili River, as their velocity is restricted due to silting and deposition in the river.

- There are certain areas of the city in the South Nagpur like Jammudeep, Mahalaxmi Nagar, Bhim Nagar, Kashi Nagar, Jogi Nagar, Sarvatra Nagar, Narendra Nagar, Sanjay Gandhi Nagar having problems of drainage being in the low laying area. Due to this, ground water got polluted in these areas and the recent study shows that there is a growing problem of Nitrate deposition as the sewers are connected in nallahs.
- Nallah retention work is not adequate.

- Due to inadequate storm drainage system, roads are acting as a natural surface drains, thereby causing, inundation of road in the Monsoon season and damages to the roads.
- Chocked drains are emerging as a major Urban Management Problem so the need for awareness creation among the people to maintain the clean drain.

VISION

- All the catchment area of the Nallah / River shall have a proper storm water drainage system through closed conduit.
- All the natural nallah / river shall have proper Nallah retention work and proper non-scouring bed to attain sufficient velocity to drain off the flood.
- All the roads in the City shall have proper road side drainage to avoid inundation of road and further to improve the life of the road.

- For drainage of low laying areas, Identification of low level land to develop as a lake / Pond which will allow the drainage of low laying areas that will again improve the ground water recharge.
- Rejuvenation of Pili and Nag River ----
- by cutting off the sewers let in these Rivers and their connecting Nallahs,
- Desilting of the rivers,
- Construction of Non-scouring bed to these Rivers and important Nallahs.

STRUCTURE OF DEVELOPMENT

Development of drainage Network along side road	No Network
Nallah Canalization	Retention wall
Rejuvenation of Nag & Pili River	Rejuvenation
Development of storm Drain Network Integrated with Road Network Development	_

COST STRUCTURE

Development of drainage	285 Km	45.00
Network along side road		Crore
Nallah Canalization	102 Km	55.50
		Crore
Strengthening existing nallah	80 Km	45.00
		Crore
Rejuvenation of Nag & Pili River	33 Km	50.00
		Crore
Development of storm Drain	Will be d	eveloped
Network Integrated with Road	with	road
Network Development	develo	pment



NAGPUR MUNICIPAL CORPORATION



HEALTH DEPARTMENT

SOLID WASTE MANAGEMENT

Management of Municipal Solid Waste

- "Municipal Solid Waste" includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid from excluding industrial hazardous wastes but including treated bio-medical waste.
- 1) Collection of Municipal Solid Waste
- 2) Segregation of Municipal Solid Waste.
- 3) Storage of Municipal Solid Waste.
- 4) Transportation of Municipal Solid Waste.
- 5) Disposal and Processing of Municipal Solid Waste.
- 6) Management of Bio Medical Waste

City of Nagpur Municipal Corporation is situated in centre of India. It is also called as "Orange City". it is one of the greenest city in India. Nagpur city is well connected with the other parts of India through road as well as railway and air

Area - 217.56 Sq. Kilometer

Road length - 2357 Kilometer

No. of Karmachari for - 3800

road cleaning

 Population
 24,00,000

 Households
 4,57,172

 Shops & Offices
 58,620

 Compost Depot.
 2

(Bhandewadi & Chikhli Khurd)

Number of Zones - 10

Number of Wards - 45 Prabhag and 136 wards an

proposed

MSW Generation - 800 TPD

1. Collection of Municipal Solid Waste

Nagpur Municipal Corporation has engaged two NGO's for house to house collection of waste. The above scheme has been named as "SWATCHATA DOOT APLYA DARI" %LoPNrk nwr vkiY;k nkjh½ and is NGO based. Scheme has ensured 100% house to house collection of garbage with growing percentage of segregation.

1. Centre For Development Communication, Nagpur

 No. of Zones
 9

 No. of Households , Shops
 4,64,272

2. Jeevak Welfare Society, Nagpur

 No. of Zones
 1

 No. of Households, Shops
 51,520

NGO's are paid Rs. 5.50 per household per month

 No. of Households
 4,57,172

 No. of Offices & Shops
 58,620

 Expenditure on privatization
 Rs. 2,86,44,000/

 Collection cost if done
 Rs. 8,03,00,000/

 Saving
 Rs. 5,00,00,000/

About 60% of the MSW is collected through Swachata Doot and west is collected through road sweeping , markets etc.

CONTINUOUS CLEANING OF COMMERCIAL AND BUSY ROADS

Contracts for cleaning of busy roads, market places, commercial area, important roads have been given to private agencies. The agencies have to work in these areas from morning to 9 p.m. (minimum 14 hours) continuously in two shifts for all seven days. The workers have to wear uniform and identify card. Minimum number of workers to be deployed per kilometer has been fixed. About 300 km of roads and 3 vegetable markets are being cleaned by 700 workers.

 Expenditure
 Rs. 1,72,00,000/

 Cost if done departmentally
 Rs. 3,20,00,000/

 Saving
 Rs. 1,48,00,000/



II) COLLECTION OF WASTE FROM VARIOUS SOURCES

A) Waste from hotel, restaurants, mangal karyalas, lawn etc. is collected through trucks on payment basis.



No. of hotels Mangal Karyalayas enrolled-363

under the scheme

Monthly income - Rs. 367000

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B) Waste from slaughter houses, meat and fish markets and vegetable markets are collected separately.



No. of slaughter Houses -

No. Vegetable Markets -

C) Collected waste from residential areas is transported to community bins through cycle rikshaws, ghanta gadis & hoppers.



D) Horticulture, construction and demolition waste and debris are collected and disposed off separately. A private agency has been appointed and lifting and transportation of building material on payment basis.





2. Segregation of Municipal Solid Waste

Nagpur Municipal Corporation with the help of NGO's have started awareness meetings to encourage segregation of waste. NGO's carrying out house to house collection have been permitted to disposed off recyclable material to such recyclable units directly.





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3. Storage of Municipal Solid Waste

Approximate area of each ward - 4 to 12 sqr. Km.

Approximate population of ward - 45000 to 50000

Approximate generation of MSW - 16 to 20 Metric Tons

Capacity of a typical community bin - 2.5 to 3 Metric Tons

No. of community bins in a ward - 4 to 6

No. of community bins in all the ward - 300

No. of community bins in market area - 40

4) Transportation of Municipal Solid waste

No. of community bin in scattered wards

Vehicles used for transportation of waste are covered from the top. Waste is not exposed to public or to environment.

 Total No. of vehicles
 60

 Trucks/ Tippers
 25

 Dumper Placers
 35



All the containers are of closed type and open trucks are covered during the transportation. These is no handling of waste when the waste is transported and unloaded by the dumper placers.

PRIVATISATION OF LIFTING TRANSPORTATION

NMC has privatized the lifting, transportation and unloading of municipal solid waste. The existing fleet of NMC vehicles has been provided to the private agency. The contractor has to deploy his own drivers, workers and POL with maintenance of vehicles. Presently 30 additional vehicles are being provided by the contractor. The payment is done on weight basis @ Rs. 155.

 $\ensuremath{\mathsf{MSW}}$ is lifted for all seven day of the work . NMC is saving about 2.5 crore due to privatization.

5) Processing of Municipal Solid Waste

A] VERMICOMPOSTING

Vermicomposting of food waste from hotel, restaurant, mangal karyalaya etc, which vegetable market is done is collected separately. About 8-10 tons of food is collected daily out of which 1/3 is converted into vermicompost. Vermicompost is used in the NMC garden.



B. Composting

Composting of other bio-degradable waste has also been started in some NMC gardens and dahan ghats.

Development of sanitary land fill in the existing dumping site is in progress. A composting plant with latest technology will be developed within the dumping site.



C. Disposal of Municipal Solid Waste

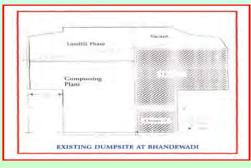
Nagpur city has two compost depot, one at Bhandewadi and another at Chikhli khurd, reserved in development plan of Nagpur city. The site at Bhandewadi is being used for dumping of waste presently.

The consultancy services of National Productivity Council, New Delhi and All India Local Self Government, Mumbai have been sought to "DESIGN AND GUIDANCE FOR UP-GRADATION OF EXISTING DUMP SITE" with financial assistance from USAEP / USAID. The project work shall be done in two phases.

 ${\sf Phase-I} \qquad \qquad {\sf -Design} \ {\sf for} \ {\sf Up\text{-}gradation} \ {\sf of} \ {\sf Bhandewadi}$

Dumpsite (Complete)

Phase- II - Up-gradation of Municipal Dumpsite.



In phase II up-gradation of existing dumpsite at Bhandewadi is going to be done. The available 55 acres of land has been devided into two parts (1) The area in which maximum MSW already dumped (2) Area in which less MSW is dumped. The MSW in second part is being shifted to the first part using proper methods and it will be closed. Then the part in which there is no existing MSW will be developed as san sanitary land fill and compost plant.



Cost of Phase – I - Rs. 474,35,576
Cost of Phase – II - Rs. 10,24,08,526

MANAGEMENT OF BIO MEDICAL WASTE

The treatment and disposal work of bio-medical waste of Nagpur city has been assigned to a private firm. The firm will charge Rs. 170/- per bed per month on 60% occupancy. Dental clinics, dispensaries, blood banks,pathology laboratories, private ayurvedic , homeopathic colleges etc. have also been covered under this scheme. Nagpur Municipal Corporation will be getting Rs. 23,50,000/- yearly as a royalty . A land admeasuring about ¼ acre belonging to NMC has been allotted to firm at Bhandewadi Nagpurs. The project has been taken on Built Own and Operate basis. Government has sanctioned 30 years lease for the Project.

Schedule of Charges

1) Hospital, Nursing Homes etc Rs. 170/- per bed/ per day on 60% only

2) Blood Bank
 3)Dispensaries
 4) Dental Clinic
 Rs. 500/- Month
 Rs. 500/- Month

8. NIRMAL NAGPUR PROJECT

Nagpur Municipal Corporation has recently started collection and transportation of municipal solid waste through out the year i.e. for all the 365 days in a year. The roads which were cleaned from Monday to Saturday uptill now are being cleaned on all sundays, public holidays etc.

B. WEAKNESSES OF EXISTING MODEL

- 1) Collection & segregation storage of MSW.
- At source segregation is very less, Mostly un-segregated / mixed MSW is disposed.
- ii) Plastic bags below 40 microns is the majors component of the un-segregated
- iii) People are reluctant to pay user charges and also there is lack of strong political will.
- iv) Swachata Doot has to handle MSW separately for recyclable and bio-degradable waste.
- v) Again while unloading into container there is handling of waste.
- vi) MSW collected from houses, streets, open places etc is not unloaded into the containers by every swachata doot or road safai majdoor.
- vii) Container / dust bin is open for 24 hours some people specially house maids throw MSW out side the container.

- viii) Nobody wants container / dustbin in the vicinity of his residence.
- ix) Equipment used for the collection & storage & MSW like ghanta gadi, cycle rikshaw, wheel barrow container etc. have a life of not more that 2 to 2 ½ years therefore it requires recurring expenditure.
- x) It is not possible to clear all the 800 container / dust bin daily.
- xi) Practically it is not possible to cover ghanta gadi & Cycle rikshaw while transportation.

2) Lifting and Transportation

- i) There are no transfer stations or collection or storage centers.
- ii) Every vehicle has to travel minimum 10 km and maximum 26 km to load and unload MSW which takes ½ to 2 hours per trip.

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V) The number of vehicle compared to Pune and Surat Municipal Corporation which was having population of about 24 lacs in 2003 similar to todays population of Nagpur.

Sr. No.	Type of Vehicles	Number		
		Pune	Surat	Nagpur
1.	Tipper	45	49	6
2.	Tractor Trolley	00	42	00
3.	Dumper Placer	82	57	35
4.	Other (Trucks)	15	4	25
5.	Heavy Vehicles	47	10	3
	(Hook Loader , heavy tipper)			
	Total	189	162	69
	Container	1700	1150	500

iv)

The status of existing fleet of vehicles

Sr. No.	No. of	Criteria of	Year of	type of vehicle	Remarks
	Vehicle	condemnation	condemnation		
1.	16	10 Year	2004	Trucks	
2.	09	10 Year	2006	Trucks	
3.	14	2,40,000 km	2005	Dumper placer	
4.	02	2,40,000 km	2006	Dumper placer	
Total	41				

The status of containers

Sr. No.	Year of purchase	Year of condemnation	No. of Container	Criteria of condemnation	Remarks
1.	1998	2000	140	2 years	
2.	1999	2001	200	2 years	
3.	2001	2002	154	2 years	
4.	2002	2003	150	2 years	
5.	2002	2004	050	2 years	

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VI) Most of the Containers are beyond repair and there is spillage of MSW while transporting.

3) DISPOSAL AND PROCESSING OF MUNICIPAL SOLID WASTE

- There is only one existing disposal site at Bhandewadi
 Other disposal site reserved in D.P. is nearer to the airport.
- ii) Presently all the MSW is simply dumped at disposal site.
- iii) The development of sanitary landfill site within the existing dumpsite is going on with the pace of availability of funds.
- Non- availability of proper disposal and unloading facilities is a major concern specially during monsoon.
- V) It is difficult to process un-segregated waste
- VI) Bio-degradable waste has low calorific value
- VII) Segregation requires huge expenditure
- VIII) These is no proven, guaranteed or cheap method for the processing and disposal of MSW.

3-VISION

The municipal solid waste generated in houses, offices, hotels restaurants, hostels, vegetable markets, shops, streets, industries, gardens, theaters, lawns or any premises should be stored in a proper way and in a proper place so as to its further processing & disposal shall be convenient and trouble free up-to disposal site. Ideally recyclable and bio-degradable waste should be collected and stored separately to ease final processing and disposal.

Expectations from the citizens of Nagpur

- No-body will litter on the roads, public places or at any other premises.
- Every body will disposed garbage generated in any house / premises in the places provided by Nagpur Municipal Corporation.
- No-body will spit on the roads or in public places.
- Everyday will segregate garbage.
- No-body will use plastic bags.
- Everybody will keep his surrounding clean and green.

4-SOLUTIONS

- Minimization of of MSW at source by way of compulsion or concession.
- Collection of wet and dry waste separately by the municipal corporation.
- Separate storage of wet and dry garbage in the community bins
- Construction of storage or transfer station in every zone specially which are away from the dump site.
- Procurement of vehicles and containers to assure 100% lifting.
- Provision of sufficient funds for capital and recurring expenditure.
- Enforcement of fine and penalties for the offenders.
- Storage of municipal solid waste collected from houses for the minimum interval.
- Transportation of MSW collected from the houses directly to the dumping yard.

FUTURE REQUIRMENTS

The Nagpur Municipal Corporation has been efficient in collecting the solid waste from all over the city and maintaining cleanliness. The need of the day is maintenance of the system in an efficient manner. For this purpose, it is required that the collection and disposal system be upgraded. To cater to the needs of the population in 2011 and 2021, when 1300 MT and 1600 MT of solid waste is expected to be generated every day in the city, additional containers, collection and transportation vehicles, waste storage and transfer stations, and infrastructure at the new waste disposal site at Bhandewadi are the immediate requirements.

SOLID WASTE GENERATION (METRIC TONS)

Zone	Area (Sq. km)	Solid Wa	ste Generation	(TPD)
Nagpur	217	Current	2011	2021
1. Laxmi Nagar	28	90	135	155
2. Dharampeth	25	75	145	175
3. Hanuman Nagar	26	90	155	165
4. Dhantoli	12	70	140	155
5. Nehru Nagar	25	80	130	145
6. Gandhibag	15	110	130	155
7. Satranjipura	18	120	150	175
8. Lakadganj	24	80	125	145
9. Ashi Nagar	19	70	135	155
10.Mangalwari	25	90	145	175
Total	217	875	1300	1600

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To modernized the existing system, a refuse compactor system needs to be installed in the existing storage depots by 2006. A waste segregation system also should be installed at a later stage in all the storage and transfer stations Infrastructure at the Bhandewadi waste disposal site is to be provided by 2006.

As part of augmentation of the system, a new and additional fleet of vehicles should be obtained from 2006-07 till which time the existing fleet is deemed sustainable. Waste storage and transfer stations should also be added from the year 2007-08. New containers should be acquired every year.

If the concept of "Bin free city" has to be implemented than smaller vehicles having capacity of 1.5 to 2 tons with tipping arrangement are to be acquired. These vehicle will collect MSW from the households, shops, etc. and directly unload it at dumping ground are transportation.

- END-

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NAGPUR MUNICIPAL CORPORATION

DEVELOPMENT AND UPGRADATION OF SANITARY LANDFILL SITE AT BHANDEWADI DUMPING YARD UNDER JNNURM





NAGPUR CITY IN BRIEF

Nagpur	Popularly Known as Orange City.
	Second Capital of Maharashtra State
	Tenth among Top
	Ten Cities In India
Area	217.56 Sq.Km.
Population	23 Lakhs
Floating	55 to 60 Thousand
Population	



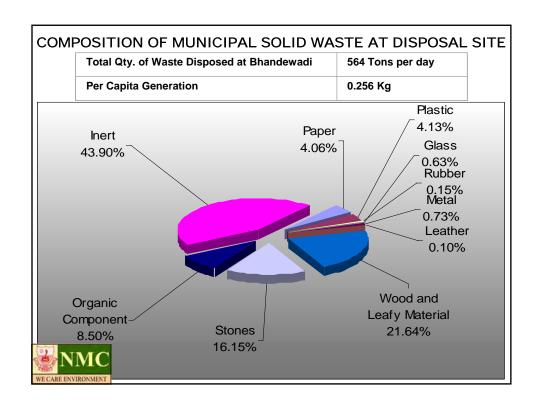


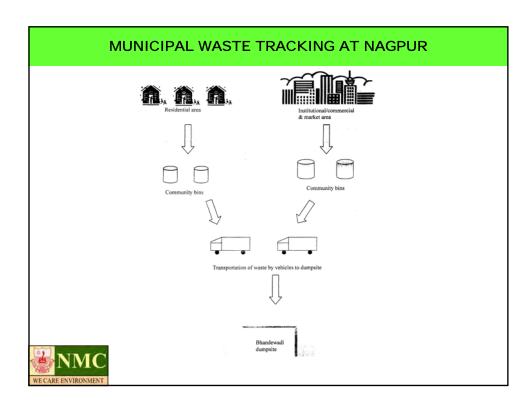
DISPOSAL OF MUNICIPAL SOLID WASTE AT BHANDEWADI ➤ NMC is responsible for the disposal of Municipal Solid Waste (MSW) generated in Nagpur City. ➤ The existing Dump site at Bhandewadi for Desposal

- The existing Dump site at Bhandewadi for Desposal of Municipal Solid Waste is Located on Eastern side of Nagpur City which is about 12 Kms from NMC.
- This is the only site in use for solid dumping Municipal Wastes by NMC.
- Here dumping activity was started since 1966.
- Site is easily accessible through the ring road.
- NMC has constructed an approach road 24 Mtrs. width from the ring road to the site.
- NMC has about 450 acres of Land nearby this site, Which has been enmarked as Sewerage Farm Land.









PROBLEMS AND ISSUES AT BHANDEWADI DUMP SITE

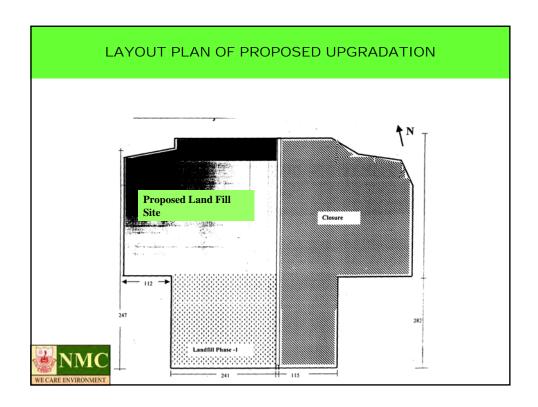
- Waste being carried away by winds, like Plastic Bags.
- Entry of Rag Pickers to lift recyclable materials and also entry of stray animals.
- During monsoon the waste is washed leading to leachate generation which is hazardous to ground water.
- Illegal burning of waste emanate fumes and air pollution.
- Odour and fly nuisance
- Trespassing by nearby residing people.

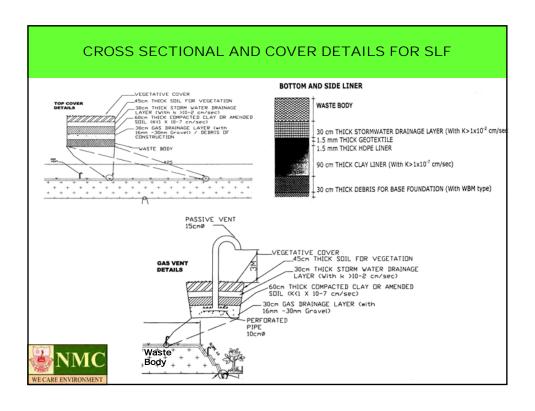


NEED AND NECESSITY OF SLF

- •The solid waste generated from domestic and commercial activities has become a major concern, as they have got the potential to cause severe environmental problems and are threatening human health and life.
- •In view of that the ministry of Environment and Forests, GOI, has enacted Municipal Solid Waste (Management and Handling) rules, in year 2000, under Environment Protection act, 1986.
- •As per this rules Municipal Solid Waste has to be managed scientifically and disposed off in an environmentally sound manner.







1 Grading and Leveling 2 Soil Bund 3 Bottom Liner 4 Side Liner System Leachate Collection and Drain including HDPE pipe Leachte collection sump and Pump for transferring Leachate to ETP 7 Cover liner System				
3 Bottom Liner 4 Side Liner System Leachate Collection and Drain including HDPE pipe Leachte collection sump and Pump for transferring Leachate to ETP Rs. 25 Crores (Rs. Twenty Five Crores)	1	Grading and Leveling		
4 Side Liner System Leachate Collection and Drain including HDPE pipe Leachte collection sump and Pump for transferring Leachate to ETP Rs. 25 Crores (Rs. Twenty Five Crores)	2	Soil Bund		
Leachate Collection and Drain including HDPE pipe Leachte collection sump and Pump for transferring Leachate to ETP Rs. 25 Crores (Rs. Twenty Five Crores)	3	Bottom Liner		
and Drain including HDPE pipe Leachte collection sump and Pump for transferring Leachate to ETP Rs.25 Crores (Rs. Twenty Five Crores)	4	Side Liner System		
6 sump and Pump for transferring Leachate to ETP	5	and Drain including	(Rs. Twenty	
7 Cover liner System	6	sump and Pump for transferring Leachate		
	7	Cover liner System	1	

MAJOR VISION

Scientifically up gradation and development of Sanitary Land Fill (SLF) Facility.

Infrastructure Facilities Required for SLF

- > Green Belt surrounding the site.
- > Strom water Drain
- > Shelter for Machinery and Equipments.
- Office Building.
- Weigh Bridge.
- Power Supply and Lighting Arrangements.
- ➤ Boundary Wall with Barbed wire Fencing.
- Internal Road Network.
- Environmental Monitoring Facility.
- Security.



MAJOR VISION

Components of SLF

- > Bottom liner system.
- > Side liner system.
- > Top liner system.
- > Leachate collection system.
- > Strom Water Diversion Channel.
- Green Belt Area.
- > Soil Embankment.
- Gas Outlet System.
- Leachate Treatment.



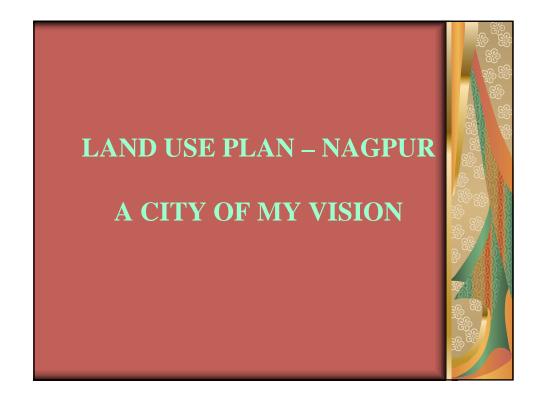
VISION

- ➤ Creation of Sanitary Land Fill Site as per the directives of Hon'ble Supreme Court.
- Create pollution free atmosphere in and around Dumping Yard.
- Reduction in ground water pollution in the vicinity of Dumping Yard.
- Creation of Garden and Playgrounds for the infants of Urban poor residing nearby Dumping Yard.
- ➤ Creation of Buffer Zone around the Dumping Yard to create working environment.









STRUCTURE OF PRESENTATION

- > DESCRIPTION OF SECTOR IN BRIEF
- > MAJOR PROBLEMS IN LAND USE PLAN
- > A CITY OF MY VISION
- > POLICY DECISIONS TO BE TAKEN
- > MANDATORY REFORMS



AREA WITHIN MUNICIPAL LIMIT 21756 HA

DEVELOPED AREA -

1984 38 %

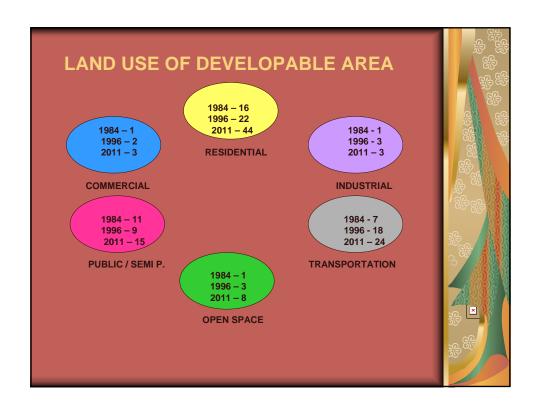
1996 60 %

2011 70 %



LAND USE IN NAGPUR DEVELOPMENT PLANS 1996 1984 RESIDENTIAL 22 % 16 % 44% COMMERCIAL 2 % 1% 3% INDUSTRIAL 3 % 3% 1% PUBLIC/ SEMI P. 9 % 11% 15% **TRANSPORTATION 18%** 7% 24% **OPEN SPACE** 3% 1% 8%

SR. NO.	RO-REGION IMPRO	AREA IN HECTORES	ESTIMATED POPULATION	
1	BESA BELTARODI IMPROVEMENT SCHEME	875.00	1,50,000	
2	BHILGAON KHAIRY IMPROVEMENT SCHEME	1018.00	1,60,000	
3	BHOKARA GODHANI (RLY) IMPROVEMENT SCHEME	1172.44	2,00,000	
4	YERKHEDA RANALA AJNI (BK) IMPROVEMENT SCHEME	1491.74	2,50,000	
5	KHARBI GODHANI NARASALA IMPROVEMENT SCHEME	1298.76	2,00,000	
6	SHANKARPUR GOTAD PANJRI IMPROVEMENT SCHEME	1521.25	2,50,000	
	Total	7377.19	12,10,000	





- PERMISSIBLE F.S.I. IN GAOTHAN AREA
- NO SHOPPING STREETS
- **IN PARKING IN COMMERCIAL BUILDINGS**
- W UNAUTHORISED DEVELOPMENT REGULARIZED UNDER GUNTHEWARI ACT
- **IN TENAMENT DENSITY**



MANDATORY REFORMS

- **DESCRIPTION** PROVISION FOR RAIN WATER HARVESTING
- INSTALLATION OF SOLAR WATER HEATING SYSTEM
- **IDENTIFY AND ICAPPED PERSONS**
- **SOLUTION** EARTHQUAKE PROOF CONSTRUCTION
- FORMATION OF HERITAGE CONSERVATION COMMITTEE







NAGPUR MUNICIPAL CORPORATION



TRAFFIC DEPARTMENT NAGPUR MUNICIPAL CORPORATION NAGPUR

NAGPUR CITY IN BRIEF



Nagpur	Popularly Known as Orange City.
	Second Capital of Maharashtra State
Area	217.56 Sq.Km.
Population	25 Lakhs
Floating Population	55 to 60 Thousand



TRAFFIC DEPARTMENT, NMC



SERVICES PROVIDED

- ➤ Looks after the traffic related works in consultation with traffic police department.
- Installation and maintenance of traffic signals.
- Improvement of Traffic Junctions.

MAINTENANCE

- ➤ Painting of pedestrian marking, Stop lines, Side Lane strips.
- Installation of various traffic signal boards as per traffic regulation.
- Parking Space management in city.

TRAFFIC STATUS OF NAGPUR CITY



Nagpur being practically at the geographical centre of India, all major highways and railways pass via Nagpur. This has resulted in the city being a major trade and transportation center. It is connected to all metropolitan cities of India by road as well as by air route.

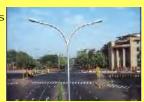
Total length of roads in the city 2000 Kms. approx.

Length of major 500 Kms.

Internal roads. 1500 Kms

Vehicular statistics of Nagpur City is as follows:

2-Wheelers - 4,00,000 Nos. 3-Wheelers - 20,000 Nos. 4-Wheelers - 60,000 Nos.



About 280 vehicles are registered every day of which 250 are 2-wheelers, 7 to 8 are 3-wheelers, and 20 are 4-wheelers. Increase in total no. of vehicles in last three years is about 33%. Frequency of 30 to 50 vehicles / minute has been observed on the highways whereas it is 10 to 20 vehicles / minute on internal roads.

TRAFFIC STATUS OF NAGPUR CITY



- ✓ NMC manages all important roads of Nagpur city. (major roads −132 nos.)
- ✓ All major roads widened upto full D.P. widths under Integrated Road Development Project (IRDP).
- ✓ ATS Signal System is installed at 110 nos. of major square and 16 nos. are under consideration.
- √ 40 nos. of Free Parking Bays have been approved of solving parking problem in city and NOC of traffic police is awaited for further 56 nos. of Parking Bays.
- √ 52 nos. of Hawking Zones have been prepared for Street Hawkers to avoid Traffic Hazards.
- ✓ For general public, Markets, Bazars have been created at various locations in city (11 nos.)

MAJOR PROBLEMS AND ISSUES FOR TRAFFIC DEPARTMENT



- Scarcity of Parking Spaces along all roads in the City.
- Problem of Street Hawkers using 4 wheeler, hand carts on the roads, causing traffic problems.
- Encroachment on footpath, by Shopkeepers and Hawkers resulting in Pedestrians coming on roads.
- Inadequate space of parking for 3 seaters, 6 seaters auto rickshaws at auto stands resulting traffic hazard at all such junction.
- Non Availability of sub-ways or cross over for crossing of heavy traffic areas.
- > Obstruction of existing Electric Poles. Transformer on all the city roads.
- Passing of Heavy vehicles through city roads.
- Violation of parking space by commercial building owners.
- Parking space problem with all community halls and lawns.
- Obstruction due to City Bus Stops on account of stopping of buses on carriage-ways.

MAJOR VISION



- Creating Parking and Non Parking Zones.
- Creation of no Hawking Zones.
- Construction of Fly Over, Sub-Ways, Cross Overs.
- Mass Transport System
- Metro / Mono Rail
- Scientifically Planned Traffic Junctions
- ATS systems at all roads and square.

STEPS NEEDED



- To prepare Parking Bays along the roads for parking of Vehicles.
- To create Hawking Zones to settle the street Hawkers at different locations.
- Improvement of Traffic junctions.
- Maintenance of Road marking painting of Zebra Crossing, lane Strips etc on all the roads.
- Installation of Traffic sign Boards.
- Construction of Fly Over.
- Shifting of Markets from congested area.
- Creating Parking Space.
- Connecting of City Roads to Ring Roads.
- Creating awareness in citizen for use of Traffic System.

REFORMS



For sorting the various types of problems related to Traffic, NMC has appointed Consultant
M/S CRAPHTS Consultants, (India) Pvt. Ltd.,
Faridabad, and the work is in progress. The main objective of the work is the attain the list of works in vision statement.





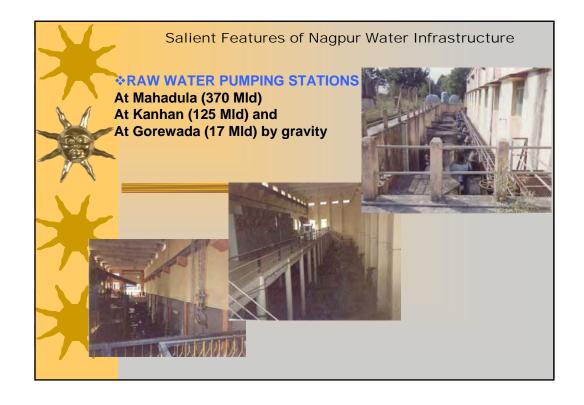
PRESENTATION ON CITY DEVELOPMENT PLAN FOR NAGPUR BY

HASTAK WATER WORKS NMC

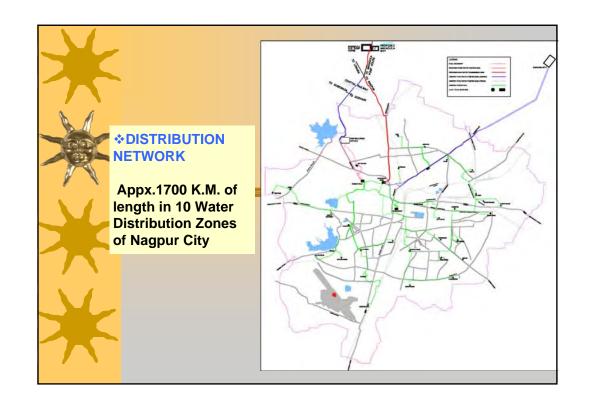
HISTORY & PRESENT STATUS OF NAGPUR WATER SUPPLY

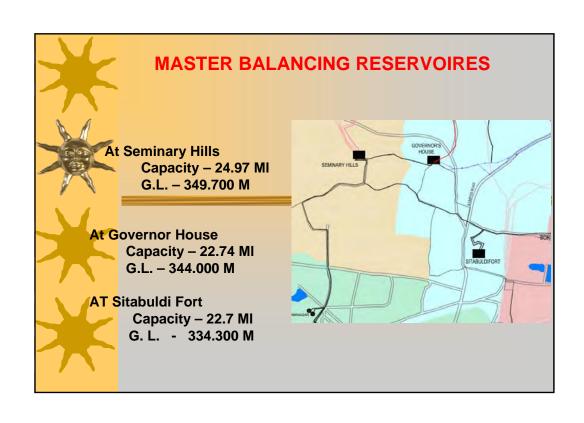
A	Year	Populati on	Water Supply in mld	lpcd Rate	Sources
-01					
0	1921	145000	16.50	114	Ambazari + Gorewada
	1941	302000	45.00	149	Ambazari + Gorewada + Kanhan
d	1961	644000	80.00	124	Ambasari + Gorewada + 1st Aug. Kanhan
1	1981	1217000	125.00	103	Ambazari (discarded), Gorewada + 3 Times Aug. to Kanhan
	2001	2150000	370.00	172	Gorewada + Kanhan + Pench -I + Pench -II
	2004	2350000	470.00	200	Gorewada + Kanhan + Pench -I + Pench -II + Pench -III
1					
1					

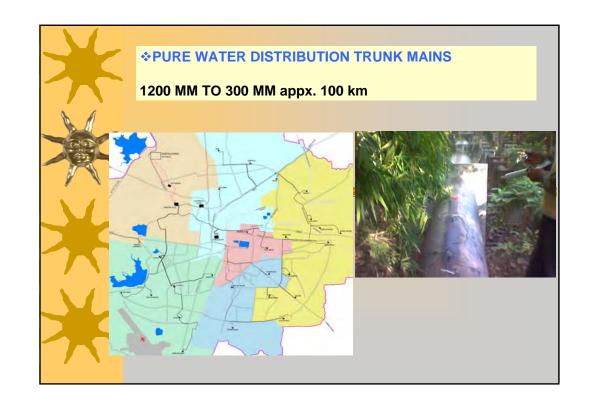
			Kanhan	120	Mld
RAW WATER DRA (AS PER IRRIGATION DEMAND			Pench – RBC at Mahadula	460*	Mld
		-	Gorewada	16	Mld
**			TOTAL	596	Mld
Kanhan Water Works	108.00	Mld			
Pench Phase – I	113.00	Mld			
Pench Phase – II	133.00	Mld			
Pench Phase – III, Stage – I	100.00	Mld		VATE >20%	R UFW
Old Gorewada	16.00	Mld	+ MAJOR LOS		
Total(rated capacity) ACTUAL CAPACITY	470.00 490.00	Mld			

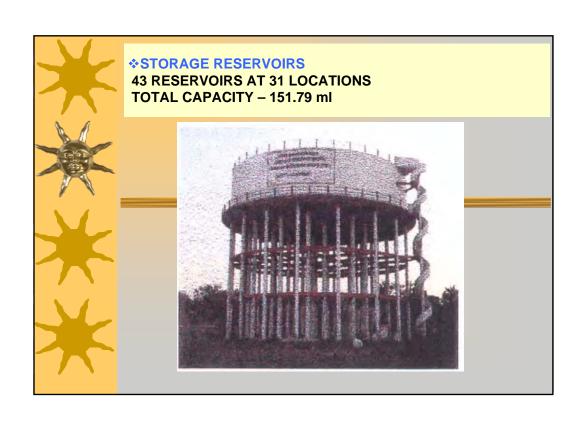


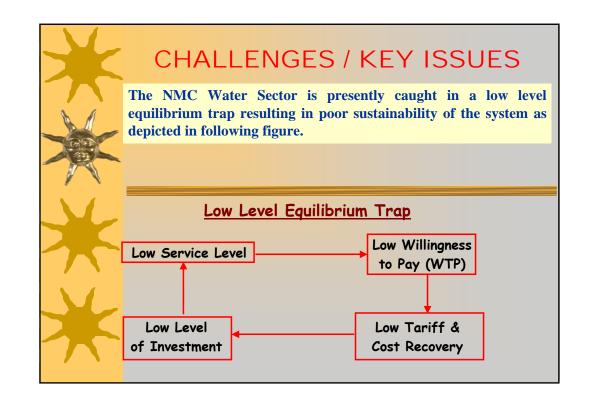
2,				
	De	escription	Capacity of Treated Water (Mld)	
	1)	Kanhan	108.00 Mld	
Ĺ	2)	Gorewada (Old)	16.00 Mld	
		Gorewada 3 Nos.		
	3)	Pench-I	113.00 Mld	
	4)	Pench-II	133.00 Mld	
	5)	Pench-III	100.00 Mld	













THE CHALLENGES ARE :-

□Institutional Complexity :- Involvement of multiple agencies such as MJP / NIT / MHADA / State Government resulting in lack of clarity of roles & accountability.

□Unequal Water Distribution.

□ High UFW / NRW :- Both commercial & physical losses.

□Low Tariff & Cost Recovery.

□Lack of Consumer Orientation.

□ Inadequate Network Coverage:- (No Connectivity in localities Developing in Fringe Areas, High Tanker Water Supply Cost)

□ Strengthening of Water Quality Monitoring Mechanism for the control of various facets of water pollution in co-operation with reputed institutions / Govt. agencies / NGO's, so that the people specially poor people are not affected.

Cont...



THE CHALLENGES ARE :-

□ Developing comprehensive O&M management systems based on preventive maintenance & Prompt completion of repairs.

■Strengthening of Water Billing & Collection System.

□ Lack of Professional & Managerial Capability.

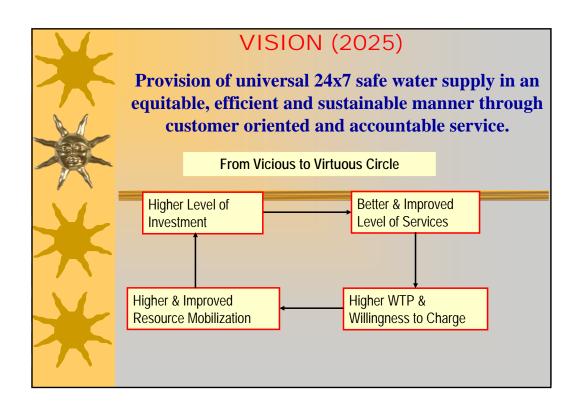
□Implementation of Energy Efficiency Measures based on Water & Energy Audit Study Recommendations.

□Introduction of Asset Management System :- Maximizing life & effectiveness of existing asset, preventive maintenance & timely replacement of old assets.

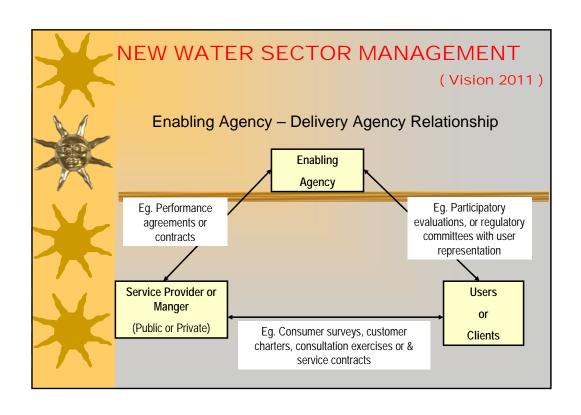
□Introduction of SCADA Systems for management of water quality / quantity in WTP, Transmission & Distribution System.

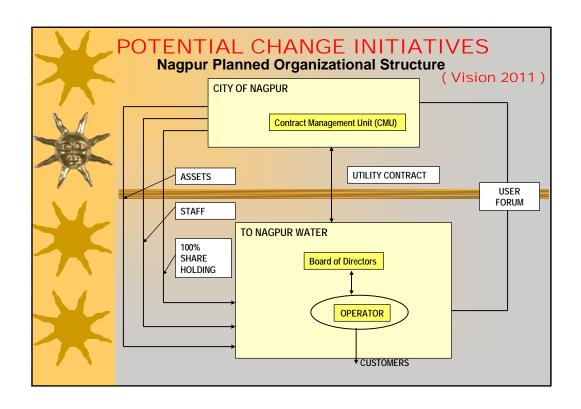
■Performance based Reward System for Staff.

■Managing expectations.



	MPROVEN	/ENT II	N KEY PERF	ORMANCE IN	IDICAT	ΓORS
	Key Performance Indicators	India Average ?	Reasonable Objectives ?	World Best ?	Nagpur City ?	Vision for 2011
	Distribution network service coverage	85%	95%	100%	80%	95%
-	Hours of supply per day	6.6 Hrs / day	24 Hrs / day	24 Hrs / day	2 – 3 Hrs / day	24 hrs / day On pilot basis
	Quality of Water	Boil before drinking	WHO Guidelines for drinking water quality	Eg. European Drinking Water Directive		
	Unaccounted for Water	27% ?	20%	5%	50%	20%
	Staff per Thousand Connections	17	5 – allowing for higher labour / capital ratio in low income country	2	5	
	Price to Average Cost Ratio	0.2 ?	1	1.3 – allowing for long run marginal costs and environmental costs.	0.5	
	Profitability (ROFA – after realistic depreciation)	- 25% ?	2% - beginning to cover cost of capital	8% - recovering cost of capital		
	Bill Collection Efficiency	75% ?	90%	97%	70%	95%







PROPOSED NEW POLICY FRAME WORK

(Vision 2011)

- Adoption of Principles of Full Cost Recovery.
- Appropriately Targeted Subsidy to Urban Poor in Transparent Manner.
- Autonomy for Tariff Fixation.
- Implementation of Internal Efficiency Improvements.
- Customer Satisfaction Focus.

STEPS TO ACHIEVE THE VISION

1. Paradigm Shifts

From	То
Engineer	Manager
Service Provider	Service Facilitator
Consumer	Customer
Supply Driven	Demand Driven
Outcome Driven	Task Driven
People Supervisor	People & Talent Supervisor
Reactive	Proactive
Cynicism	Optimism

Cont...



STEPS TO ACHIEVE THE VISION

- 2. Proposed New Measures for Water sector that can deliver Improvements
- A. COMMERCIAL SYSTEMS DEVELOPMENT:-
- **B. HUMAN RESOURCES MANAGEMENT:-**
- C. POLICY AND ORGANISATIONAL DEVELOPMENT:-

Cont...



STEPS TO ACHIEVE THE VISION

2. Proposed New Measures for Water sector that can deliver Improvements

A. COMMERCIAL SYSTEMS DEVELOPMENT :-

- Creating Separate Water and Sewerage Budgets and Balancing expenditure with income each months.
- Commercial Accounting for Water & Sewerage Services.
- > Effective use of Performance Indicators & Bench Marking.
- > Asset Management Systems.
- > Setting Water & Sewerage Tariffs at Sustainable Levels.
- > Improvement in Customer Services by Measures such as...
 - i. Streamlining procedure for new connections & paying water charges bills.
 - ii. Maintaining an update customer data base after detailed survey of all connections
- Reduce un-authorized water connections by suitable measures like temporary amnesties for regularizing connections.

Cont...



2. Proposed New Measures for Water sector that can deliver Improvements

B. HUMAN RESOURCES MANAGEMENT:

- Management Development Programmes for senior and middle levels staff for their capacity building.
- Develop & Implement Comprehensive Training Plans for all Staff based on detailed training need analysis and developing attitude, skills and knowledge.
- Seek Partnerships with Appropriate Training Institutions.
- Attract & Retain Staff with the required skills to meet the organizational objectives.
- Increased delegation of duties & staff authority limits.
- Implement open staff appraisals.
- Increase the status of key posts such as staff dealing with O&M, customer services & financial management
- Develop staff incentives including promotions on Merit & Bonus Schemes.
- Pilot change initiatives to bring about organization improvement building and encouraging team of different departments to work together

Cont...

STEPS TO ACHIEVE THE VISION

2. Proposed New Measures for Water sector that can deliver Improvements

C. POLICY AND ORGANISATIONAL DEVELOPMENT:-

- Agree specific objectives, strategic plans and policies for urban water services over the coming 10 to 20 year from State Govt. and other agencies.
- Complete the decentralization of responsibilities.
- Improve the autonomy of the 'service provider'.
- Undertaking organizational restructuring.
- Establishing clear 'service provider' and 'enabling agency' roles.
- Enabling legislation for Public Private Partnerships.
- Developing new performance agreements between service providers and enabling agencies



Y		REFORMS INITIATED ctural Improvement	
	Reform – (i)	Framing Strategy for Private participation in Repairs & Maintenance of Water Distribution Network through annual contracts.	
00	Action by	February 2003 (action completed)	
	Investment	About Rs. 10/- Lacs per year per Zone	
	Savings / Benefits	Performance Guarantee ensured.	
	Reform –(ii)	Reorientation of working of 10 zones for water distribution with respect to the ESR command area.	
	Action by	August 2003 (action completed)	
	Investment	Nil	
不	Savings / Benefits	Responsibility & accountability in service delivery with respect to distribution of water and recovery of water charges is fixed.	

		REFORMS INITIATED stural Improvement
Š.	Reform – (iii)	Framing Strategy for Private participation in Repairs & Maintenance of Borewells including Comprehensive Preventive Maintenance
X	Action by	January 2004 (action completed)
Y	Investment	About Rs. 26 /- Lacs per year for 10 zones.
X	Savings / Benefits	Responsibility & accountability in service delivery with respect to Repairs & Maintenance of Borewells is fixed. Preventive Maintenance has improved the service of hand pumps of borewells reducing frequent failures.

4		EFORMS INITIATED lity Improvement
	Reform – (iv)	Use of PAC as coagulant in place of Alum
	Action by	2002 - 2003 (action completed)
	Investment	About Rs. /- Lacs per year.
	Savings / Benefits	Improvement in quality of treated water, efficiency of filtration and better House keeping.
XX	Reform – (v)	Use of vacuum chlorinators in place of gravity chlorinators
	Action by	2003 - 2004 (action completed)
11	Investment	About Rs. /- Lacs per year.
来	Savings / Benefits	Improvement in controlled dosing, reduction in excess use, better quality of water.
		Cont

		EFORMS INITIATED lity Improvement
	Reform – (vi)	Use of Electrochlorinators for Booster Chlorination at ESR
X	Action by	March 2006 (70% work completed)
V.	Investment	Investment about Rs.140 /- Lacs Recurring expenditure about Rs 26 /- lacs per year.
*	Savings / Benefits	Minimum Residual chlorine as per norms is maintained in water at consumer end improving the service level.
*		

		eforms INITIATED nt to Distribution Network
	Reform – (vii)	Improvement to Distribution in Makardhokada area Katol Road
	Action by	2004-2005 (action completed)
	Investment	Rs.90/- Lacs
	Savings / Benefits	Water supply is improved in terms of quantity & pressure, improving the service level.
	Reform – (viii)	Improvement to Distribution in Surendragadh area High Land drive Road
	Action by	Phase - I completed Phase - II by 2006
	Investment	Rs.275 /- Lacs in two phases (135+140)
X	Savings / Benefits	Improvement in service level.
		Cont

	REFORMS INITIATED 3. Improvement to Distribution Network		
	Reform – (ix)	Improvement to Water Distribution System for North Nagpur	
M-	Action by	2006 (Work in Progress)	
	Investment	Rs.96/- Lacs	
	Savings / Benefits	Improvement in service level.	
	Reform – (x)	Improvement in Water Supply to Nandanvan ESR.	
	Action by	2006 (Work in Progress)	
	Investment	Rs.47 /- Lacs	
深	Savings / Benefits	Improvement in service level.	
		Cont	

		REFORMS INITIATED nent to Distribution Network
	Reform – (xi)	Expansion / Upgradation of Water Distribution Network of different E.S.R.s in Nagpur City.
X	Action by	2007 (Phase - I Work in Progress)
SC.	Investment	Rs.440/- Lacs (Phase I Rs 110 /- lacs & Phase II Rs 330 /- lacs)
大 火	Savings / Benefits	To make available Primary Network of Main Lines to facilitate connectivity to NIT layouts under regularization scheme of un-authorized Layouts.
不		Cont

	REFORMS INITIATED 3. Improvement to Distribution Network		
	Reform – (xii)	Water Supply Scheme for Wadi Tekadi	
	Action by	2006 (Work in Progress)	
	Investment	Rs.174/- Lacs	
X	Savings / Benefits	Improvement in service level.	
	Reform – (xiii)	Improvement to distribution system of Dabha ESR and adjoining area	
	Action by	March 2007	
	Investment	Rs.223/- Lacs	
义	Savings / Benefits	Improvement in service level.	

REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation			
of recommendations of Audit Reports.			
Reform – (xiv)	Conducting water Audit through consultant		
Action by	2006 (Work in Progress)		
Investment	Investment about Rs.45/- Lacs (75% grant in aid by govt. of Maharashtra)		
Savings / Benefits	Identification of real + commercial water losses in the system and measures to be taken.		
	Last Haller of Florida Association December Tracket		
Reform – (xv)	Installation of Flow Meters to measure Raw water, Treated water and Water actually distributed.		
Action by	2006 - 2007 (Work in Progress)		
Investment	Investment about Rs.202/- Lacs (Phase I Rs 32 /- lacs & Phase II Rs 170 /- lacs)		
Savings / Benefits	Annual saving of Rs. 165 lacs in Raw water charges payment to State Irrigation Department.		

Cont.

	REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.		
米	Reform – (xvi)	Laying raw water main from Pench Reservoir to Mahadula Headworks to reduce raw water losses through canal.	
L	Action by	2009	
	Investment	Rs.162600 /- Lacs	
	Savings / Benefits	Saving of water – Approx. 230 mld saving in raw water cost – Rs. 874 lacs / year. More water availability for Agriculture and drinking water reservation.	
		Cont	

X	REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.		
X 4			
不	Reform – (xvii)	Rehabilitation of old pumping main from old Gorewada Pumping Station & Water Supply Scheme to extend water supply to area to the North of Gorewada Village	٢
Y	Action by	Phase – I & II by Year 2007 Rs. 124.2 lacs , Phase – III by year 2008 Rs. 177.8	
不	Investment	Rs.302 /- Lacs in three phases (14.5 + 110.7 + 177.8)	
X	Savings / Benefits	Replacement of old assets.	
		Cont	

X	REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.	
	Reform – (xviii)	Laying of pumping main for diversion of Pench-I W.T.P. water to Govt. House GSR
	Action by	2007
	Investment	Rs.423.72 /- Lacs
V.	Savings / Benefits	Saving of electric charges due to reduction in pumping head and availability of water at Raj Bhavan GSR & achieving equitable distribution to Narth & South Nagpur.
A	Reform – (xix)	Extension of parallel pipe line of Kanhan Pumping Main from Automotive Sq. Kamptee Road to Subhan Nagar ESR
	Action by	2007
M	Investment	Rs.494.9.72 /- Lacs
7	Savings / Benefits	Diversion of water from Kanhan Water works to achieve equitable distribution to East & part of Central Nagpur.
		Cont

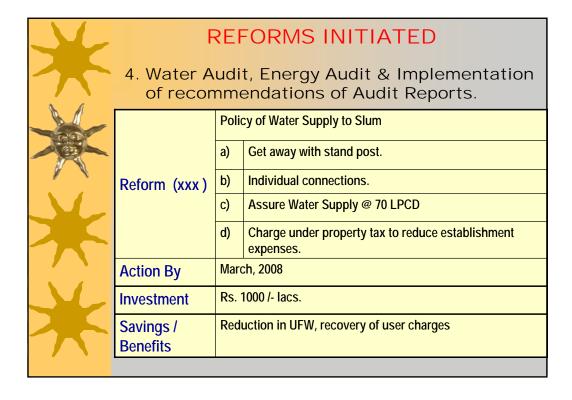
X	REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.	
M	Reform – (xx)	Renovation of civil structures including raw water channel flash mixer, clariflloculators & filter units at Pench-I treatment plant.
	Action by	2007
	Investment	Rs.300 /- Lacs
L	Savings / Benefits	Increasing efficiency of treatment plant, Reduction in wastage of water.
	Reform – (xxi)	Replacement of pumping machinery with online monitoring at Pench-I pure water pumping station.
	Action by	2007
	Investment	Rs.225 /- Lacs
1	Savings / Benefits	Reduction in energy bill. Replacement of old Assets.
		Cont

	REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.	
M	Reform – (xxii)	Up gradation of pumps & on line monitoring in Pench Phase-II
	Action by	2007
	Investment	Rs.50 /- Lacs
L	Savings / Benefits	Reduction in energy bill. Replacement of old Assets.
	Reform – (xxiii)	Up gradation of pumps in Pench Phase-III Stage-I
	Action by	2007
	Investment	Rs. 25 /- Lacs
T	Savings / Benefits	Reduction in energy bill. Replacement of old Assets.
		Cont

X	REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.	
	Reform – (xxiv)	Replacement of raw water pumping machinery with CORRO- COAT Application and on line monitoring in Pench-I Mahadula
	Action by	2007
	Investment	Rs.120 /- Lacs
	Savings / Benefits	Reduction in energy bill. Replacement of old Assets.
2,5	Reform – (xxv)	Replacement of raw water pumping machinery with CORRO-COAT Application and on line monitoring in Pench-II Mahadula
	Action by	2007
	Investment	Rs.100 /- Lacs
	Savings / Benefits	Reduction in energy bill. Replacement of old Assets.
		Cont

REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.	
Reform – (xxvi)	Replacement of pumping machinery with CORRO-COAT Application and on line monitoring
Action by	2007
Investment	Rs.30 /- Lacs
Savings / Benefits	Reduction in energy bill. Replacement of old Assets.
Reform – (xxvii)	Replacement of pumping machinery with CORRO-COAT on - line monitoring at Kanhan Water Works
Action by	2007
Investment	Rs.125 /- Lacs
Savings / Benefits	Reduction in energy bill. Replacement of old Assets.
	Cont

X	REFORMS INITIATED 4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.		
	Reform – (xxviii)	Construction of additional gates and repairs to Godbole Gates at Gorewada Tank.	
7	Action by	March 2007	
	Investment	Rs.100 /- Lacs	
	Savings /	Reduction in water losses, strengthening of old Assets.	
	Benefits		
	Reform – (xxix)	Policy for Water Supply to Slums.	
	Action by	2007	
	Investment	Rs.30 /- Lacs	
**	Savings / Benefits	Reduction in energy bill. Replacement of old Assets.	





REFORMS INITIATED

4. Water Audit, Energy Audit & Implementation of recommendations of Audit Reports.

Reform (xxxi)	Reducing UFW in water supply schemes by 25 %.		
	i) Strengthening the active leak control program		
	ii) Replacement of old / deteriorated pipelines.		
	iii) Performance based contracts with bench mark for each		
	zone, based on water audit study.		
Action By	2009		
Investment	Expected Rs. 4000 to 5000 lacs (details are under process)		
Savings /	Strengthening of water supply services.		
Benefits			

REFORMS INITIATED 5. Strengthening and Modernisation of Kanhan Water Treatment Plant (1.)Construction of New Treatment Plant of 75 MLD capacity. (2.). Rehabilitation of old Pure Water Sump at Kanhan water Treatment Plant. (3.) Construction of Retaining Wall at Kanhan Head Works Action by 2009 Investment Rs.2500 /- Lacs Savings / Benefits Strengthening, Replacement of old Assets.

B	1		REFORMS INITIATED		
T.	6. A Journey towards 24 x 7				
		01	Provision of 24X7 Water Supply in Selected Zone (Dharampeth) on pilot basis		
3			i) Maintenance of the system. ii) Read bulk meter. iii) Locate & rectify the leaks to reduce losses. iv) Prepare water balance for zone and sub zone. V) Meet performance target on losses.		
		02	Metering, Billing & Collection		
Reform (xxxii	Reform (xxxiii)		i) 100% customer metering (supply / install / maintain / replace the faulty meter) ii) Read customer meters and bill customers. iii) Obtain payment details from NMC. Iv) Meet performance target on billing.		
		03	Customer Service Management		
			i) Resolve customer issues. ii) Connect new customers. iii) Meet performance target on service.		
	Action By		2007 to 2011		
	Investment		Expected 350 lacs (details are under process)		
	Savings / Benefits		Services upto optimum Consumer satisfaction		

X		on of sluice valve operation
	Reform – (xxxiv)	Operation of sluice valves at ESR / GSR & distribution
	Action by	areas in 10 zones March 2006 - 2007
	Investment Savings /	Rs.120/- Lacs Improvement in Consumer Service.
	Benefits	
7		
1		

	6	REFORMS INITIATED
	8. Water Billi	ng & Recovery System Improvement
	Reform – (xxxv)	Making arrangement for spot Billing to the consumers availing municipal water supply in various zones of Water Works Department of Nagpur Municipal Corporation
	Action by	March 2006 - 2007
	Investment	Rs.60/- Lacs
	Savings / Benefits	Improvement in Consumer Service.
V		
大		

		REFORMS INITIATED f Water Rate Bye-Laws
F	Reform – (xxxv)	Categorization of Water tariff structure based on use water, Incorporating stringent provision against un- authorized use of water
	Action by	2006-2007 (Subject to policy Decision
	nvestment	NA
	Savings / Benefits	Water Supply On No-loss No-Profit.
*		
*		

M-	CIT	ΥC	EVELOPMENT PLAN FOR NAGPUR			
	01]	Visio	Vision for the City of Nagpur.			
		Vision for the city of Nagpur is to enhance health and quality of life for the citizens in Nagpur city by providing them basic civic amenities at affordable price.				
00	02]	Visio	on for Water sector / services .			
		To provide continuous 24X7 potable water supply to all the citizens of Nagpur city at sustainable basis and at affordable cost.				
V.		To enhance the standard of service delivery and developing a complete transparent administration by taking a consumers into confidence.				
	03]	SWOT Analysis				
		Stren	gths:			
		i)	Water availability			
		ii)	Availability of master plan			
		iii) Availability of primary data.iv) Availability of qualified Engineers.				
		v)	Supportive top management.			
			Cont			

CI	TY (CEVELOPMENT PLAN FOR NAGPUR	
	Weakr	nesses :	
	i)	High NRW I.e. Non-revenue water.	
	ii)	Overlapping roles of different authorities.	
	iii)	Inequitable water distribution.	
000	iv)	Poor service delivery.	
	v)	Poor customer relation management.	1
	vi)	Inadequate water billing and recovery system.	
	vii)	Unwillingness to charge.	
	viii)	Inappropriate targets subsidies in water tariff.	1
	ix)	Lack of professional and managerial capacity.	
	x)	Gaps in Service Delivery- Water.	
		Intermittent ,Inequitable, Inefficient	1
		High NRW: 50% or more, Poor metering	
		Inadequate services to the poor	
		Contamination in distribution	
		Low Pressure at tail end	
		Cont	

M	CI	TY CEVELOPMENT PLAN FOR NAGPUR			
	Oppor	tunity :			
	i)	Scope for PPP : I.e. public private partnership to rope input investments and expertise for carrying out internal efficiency improvement.			
A STATE OF THE STA	ii)	Further simplification of existing procedures for facilitating entry of more and more consumers in meter net.			
	iii)	Bench marking for different activities.			
	iv)	Performance based service contracts			
/	v)	Designing rational water tariff			
	Threat	Threats:			
	i)	Increasing water thefts and illegal water connections.			
	ii)	Recovery of water charges from slum localities.			
	iii)	Political interference.			
	iv)	High costs on tanker water supply.			
	v)	Absence of personal and carrier development opportunities for Municipal staff, hence low motivation levels.			
	Main L	imitations :			
	i)	Paucity of funds to implement measures towards internal efficiency improvements.			
	ii)	Approval of proposed new tariff structure by the General Body of Municipal Corporation.			





Salient features of the Nagpur City

- It is a 300 years old city.
- Second Capital of Maharashtra State.
- It is called as "Orange City."
- It is the second Greenest City and Pollution free.
- Area of 217.56 Sq. Kms.
- Population of the City is 23.50 Lakhs (2005)

Potentials of Nagpur City

- Well connected with road, rail and air.
- Potential of Agro foresting zone.
- Important Urban centre in Central India.
- Largest trading hub of Central India.
- Kalamna Market Yard (Biggest Grain Market in Asia).
- Butibori Industrial Estate.
- Emerging as Educational Hub.
- Also emerging as Information Technology Centre.

Present Status of Water Supply					
Sr. No.	Source of Water Supply	Treated water supplied from WTP (in MLD)	Demand (in MLD)		
1	Kanhan	108	1		
2	Pench – I	113			
3	Pench – II	133	-		
4	Pench – III	100			
5	Old Gorewada	16			
	Total	470	489		

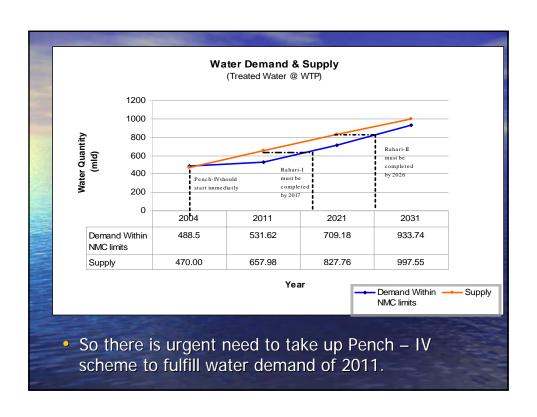
Deficit Aggravates, Why?

- Course of Kanhan River changes frequently.
- Very high Turbidity.
- Clogging of Filters.
- Very old Pumping Machinery at Kanhan WTP.
- Pench Dam water is transported through Right Bank Canal to Raw Water Pumping Station at Mahadulla.
- If canal closure exceeds 7 days water level in Gorewada Lake depletes so much so that there is deficit of Raw water at Pench WTPs.

Water stress due to Population growth

	Sr. No.	Year	Population in Lakhs.	Water Demand at WTP (in MLD)
	1	2005	23.50	489
THE STATE OF	2	2011	28.30	532
	3	2021	36.90	709
	4	2031	47.50	934

Wat	er Dei	mand	Vs Supply	up to 203	1
Yəsr	Deman d (Treate d water)	Supply (As on 2004)	Future Planning	Surplus/Defi cit over Existing supply (+/-) Mld	Net surplus /deficit over existing + future planning supply
2011	532	470	113(Pench-IV additional)	(-)62	+51
2021	709	470	113(Pench-IV) + 175(Rahari-1)	(-)239	+49
2031	934	470	113(Pench-IV) +175(Rahari- I) +175(Rahari- II)	(-)464	(+)1



Components of Pench – IV Scheme					
Part	Particulars	Amount (in Crores)			
I	Transportation of water through pipeline	162.62			
IJ	WTP, Pumping Machinery and Pumping Main	58.95			
III	Feeder Mains & ESRs.	86.39			
IV	Proposed and upgradation of existing system	114.35			
	Total	422.31			

Present Status of Pench - IV

- Pench IV, Part I has been submitted to the State Govt. for Administrative Approval with following financial pattern
 - > Estimated Cost of the Scheme -

Rs. 162.62 Crores.

> Grant in Aid (23.33%) -

Rs. 37.93 Crores.

Loan (Bank/Bonds/Others 76.67%) - Rs. 124.69 Crores.

- EoI has been called to carryout the work on BOOT.
- Pench IV Part II & III DPRs are ready.
- Pench IV part IV DPR is under preparation.

Augmentation Schemes beyond 2011					
Sr. No.	Scheme	Capacity (in MLD)	Estimated cost (in Crores)		
1	Rahari Barrage – WTP, Pumping Station, ESRs, Distribution System	350	975.64 (1997)		
2	Kochi Barrage	531	> 1000		



Vision by 2011 Save water losses due to seepage in cracks and crevices of the open canal. Save water costs due to evaporation. Irrigation Dept. should get enough time for repairs to canal. Augment City Water Supply by 113 MLD to make it deficit free by the year 2011. Water for every citizen by 2011.



ANNEXURE B: CAPACITY BUILDING SESSION FOR BUSINESS GROUPS AND INDUSTRY ASSOCIATIONS

Date: 18th January 2006

Agenda: Capacity building workshop for business groups and industry associations in Nagpur for city vision and mission preparation exercise.

Attendees: Representatives of business groups and industry associations such as Vidarbha Industries Association, Vidarbha Association of Software Exporters, Hardware Dealers Association, Lambent Technologies and Baidyanath and the CRISIL Infrastructure Advisory Team

Time: 5 p.m.

Venue: Nagpur Municipal Corporation premises

The workshop began with the Municipal Commissioner (MC) Municipal Commissioner making a presentation on the objectives of JNNURM and a description of the various stages of preparing the CDP for Nagpur city. This was followed by a question and answer session.

QUESTION & ANSWER SESSION

- Q: How frequently can we meet for discussing the Vision? We need a print out of the presentation? MC: The CDP preparation will be spread over three months starting from the middle of January.
- Q: We should become the first the city to get funds from the Central Government. We need to think collectively to formulate the CDP for Nagpur. It is our foremost responsibility of all Nagpurians to contribute to this process to realize our dream. We, the industry group, need to brainstorm on this issue. We need to distribute the sector amongst ourselves.

MC: I need to clarify that this is not our plan. This is your plan. Actual development can happen only if income levels in the city increase and employment opportunities are created in the city. All of you have to play a very important role in the growth of the city.

- Q. This is a difficult process. It is question of comprehensive assessment of the city. It is a question how to increase the GDP and the per capita income of the city. We need to have weekly meetings to decide on the issues.
- Q. The process seems to be aiming to reduce the role of the government in the development process. MC: The first stage of process is to formulating the vision of the city. Then we can deliberate on the action plan subsequently.
- Q: Is there a limit on the vision I can have for the city? Will the central government allow our dream to be realized?

MC: The success of the programme is not limited by the central government. It is for us to visualize the plan for our city and formulate a strategy to realize it.

- Q. Cluster based approach needs to be incorporated in the visioning process.
- Q: There should be will from the government agencies to implement the plan. The visioning process should address the problems in the formulating of the vision. There needs to be collective will to realize the vision.

Q. Health sector of Nagpur provide services for the states of Chattisgarh and other adjoining states. This needs to be further promoted. Are there plans to earmark land for health sector? MC: We can plan for services like health and IT. We can certainly do that.

Q: We need to focus on two-three sectors in the era of globalization and develop a competitive advantage.

MC: We will plan the infrastructure requirements according to the visioning exercise. Also we need to ensure the vision is marketable.

Q: We need to health services to the citizens of Nagpur. Services like checking for AIDS, TB, diabetes, and blood pressure should be easily available for the local people. There is a need for emergency medical facilities - say 10 ambulances at different locations in the city providing emergency medical care.

ANNEXURE C: CAPACITY BUILDING SESSION FOR CLUBS AND NGOS

Agenda: Orientation meeting with the stakeholders (Rotary clubs, NGOs etc.)

Date: 21st January 2006

Attendees: 30 approximately representing various clubs and NGOs

Time and venue: 12 noon, NMC meeting hall

Presentation by Municipal Commissioner

The workshop began with a presentation by Municipal Commissioner Lokesh Chandra. He began by first outlining the objectives of the Jawaharlal Nehru Urban Renewal Mission. The difference between JNNURM and other urban development programmes in the past is the integrated approach to urban development. More importantly it is citizen's plan for the city and not Nagpur Municipal Corporation's plan. JNNURM has provided the citizens of Nagpur to present their own needs. The purpose of this workshop and those planned in the coming weeks to discuss and brainstorm. It is important to base your vision for Nagpur city on realistic needs, strengths and weakness of the city. It is not just about roads or any one aspect of urban infrastructure or life but about meeting the economic and social development of the people.

The Mission's objective is to make the city self-sufficient. Eventually it will be the responsibility of the city to pay for the operation and maintenance of the assets created out of the funds from JNNURM. Good urban governance is a critical component of the Mission. We need to make our cities citizen friendly, equitable, investment friendly and bankable. We need to market our cities. This is the first time that we have been given an opportunity to speak up.

Stakeholder Comments

Stakeholder 1: Various agencies and NMC officials have initiated different programs. We need to call review meetings of past projects and consultants.

Stakeholder: Is there any provision of setting up a monitoring committee for this project?

Stakeholder 2: People's participation is important. It should be people's decision and government's participation. We need to have mutual trust and transparency. How we create that, is the most critical issue. We need to concentrate on middle and poor class people. We need to upgrade our municipal schools.

Stakeholder 3: Urban poor need to be at the centre of planning. There cannot be any conflict in this area. We need to prioritise beyond individual preferences.

Stakeholder 4: Nagpur can be a gateway to central India tourism. Nagpur should be made the garden city of India.

Stakeholder 5: It is time that we start preparing the next development plan

Stakeholder 6: Ring road network is critical in the long run. Separate lanes for pedestrians and cyclists are required. Hawking zones are required in all areas. Existing markets need to be developed. Education must be made a priority. Standards need to be revised. Rivers need to be conserved.

Stakeholder 7: Is it possible to think 10 years from now? Technology is moving so fast. Will we really need so many roads? Inputs should be sought from experts for a more realistic planning and visioning exercise. Should we concentrate only on those areas, which concern the common people? Do we really need development? The good things about Nagpur – its peace, greenery etc. need to be preserved. Roads constructed under IRDP have buried the utility lines underneath. About Rs.300 crores needed to rationalise those lines.

ANNEXURE D: CAPACITY BUILDING SESSION FOR REPRESENTATIVES OF PRESS AND ELECTRONIC MEDIA

Date: 25th January 2006

Agenda: Information session on JNNURM and CDP preparation process.

Attendees: Representatives of the press and electronic media

Time: 5 p.m.

Venue: Nagpur Municipal Corporation premises

Municipal Commissioner (MC) Lokesh Chandra first outlined the objectives of JNNURM. He requested the media representatives to propagate the message about the CDP process amongst its viewers and readers. He also gave them the email id (cdp_nagpur@yahoo.co.in) for receiving suggestions and inputs from the local people. The media has been asked to publicise this email id and urge the citizens of Nagpur to respond to the following questions:

- 1. What do I like about Nagpur?
- 2. What do I dislike about Nagpur?
- 3. I dream about Nagpur as...

Question & Answer Session

Q. In the development of the city we should not forget the heritage of the city.

MC: NURM process also includes the preservation of the cultural sites.

Q: What has been the status of the MONORAIL in the Nagpur?

MC: We need to plan for the future. The need for MRTS has to be envisaged today. If we plan today, then in five years or so we shall be ready for having the

Q: What is the potential for IT in Nagpur? CM has said Pune is lagging behind because oz of poor roads.

MC: Satyam already has taken 100 acres of land in the SEZ area. With Satyam, we have made a beginning and slowly we shall see more IT investments. Also, now Nagpur has got an international airport and we can market our city as a destination for health tourism.

Q: CDP for Nagpur does it also have plans for increasing the municipal limits of the city. The CDP preparation will also look into the requirements of the fringe areas of Nagpur city.

Q: Can the local body have a power generation plant of its own under NURM?

NURM does not include power plants. We can lower our energy consumption by having our own waste energy plant.

Q. Who is the consultant appointed for CDP?

MC. CRISIL has been appointed as consultants.

Q. Which are the stakeholders, which have been consulted so far?

NGOs, clubs, business groups and industry associations and other government departments like MSRTC, MSEB etc.

Q. You have not included politicians in the process

We will have separate information session for them.

Q: Which are the other Cities in Maharashtra included under NURM? Mumbai, Pune, Nasik and Nanded.

Q. What role does NIT have to play? NIT inputs will be sought in the formulation of City Development Plan.

ANNEXURE E: DISCUSSION WITH IDENTIFIED INDIVIDUAL STAKEHOLDERS

Agenda for the discussions:

The objective of meeting the stakeholders in Nagpur during the three-week period from 17th January – 4th February 2006 was multifold. Firstly, it was to inform the stakeholders about the concept of City Development Plan as a part of JNNURM. Secondly, it was to update them on the discussions and outcomes of Workshop held with NMC officials on 17th February 2006. Thirdly, it was to seek their ideas and perceptions regarding Nagpur. The areas of discussion included strengths and weaknesses of Nagpur, their vision for Nagpur and what should the city focus on, to achieve that vision.

The list of stakeholders was prepared so as to ensure balanced coverage of all the focus areas of a city development plan.

Stakeholder 1

Given the stakeholder's current profession/business/interest, the focus area of discussion was **land use** and town planning.

Stakeholder's comments

There are various issues with the current level and type of development in the city. The FSI permitted by the development plan has not been consumed completely in the developed areas, so there is scope for more development even in the existing developed parts of the city. The amount of open spaces developed in the city is inadequate.

The Development Plan sanctioning, revision and re-sanction process takes up so much time that the relevance of the plan is lost. By the time, it gets the approval; the land has already been occupied by un-authorized layouts, which eventually get regularized. Hence the development plan, its vision and objectives lose their meaning. Enforcement of development plan, with respect the prevention, demolition and regularization of unauthorized layouts needs to be strengthened.

Key strengths of the city are excellent road and rail connectivity, ample land availability and well developed roads. A key area of weakness if that demography is getting skewed towards old – hence becoming a pensioner's city. Opportunities for Nagpur include Multimodal International Transport Hub Airport of Nagpur (MIHAN).

Vision for the city is that it should become the national capital.

Areas of improvement are that town planners and city engineers should co-ordinate with each other rather than interfere in each other's work. Also, NMC and NIT should have a common face for public, for which, backend co-ordination needs to be strengthened with information technology.

The quality of municipal services varies across areas within the city. Core municipal services like water, sanitation etc. are good within the ring road area. Certain pockets are bad especially because of unauthorised layouts and hence lack of planning. Overall, both social and physical infrastructure in the city are good but more CBDs (central business districts) are needed in the city peripheral areas to have a balanced growth

Stakeholder 2

Given the stake holder's current profession/business/interest, the focus area of discussion was **tourism.**

Stakeholder's comments

MTDC has developed several nature related tourist spots around Nagpur including hydro-power project sites, forests, and dams. In Nagpur, we have a tourist reception centre with single-window system. A grand zoo is also expected to come up in the city and a transport hub is being developed at Wardha road.

My vision for the city is that Nagpur city should become a highly modern city like Singapore. Airport expansion must be done for attracting more tourists to the city.

Stakeholder 3

Given the stakeholder's current profession/business/interest, the focus area of discussion was **environment.**

Stakeholder's comments

Nagpur has emerged out of forestland and hence neutralizes the high development activity and pollution levels in rest of Maharashtra. The pollution levels are increasing as the vehicular population is increasing fast. There are also acute problems of air pollution in old city areas and around the thermal plants. Old industrial units do not have the adequate pollution control mechanisms. Mining activities also add to the pollution levels. Thus, common effluent plants need to be developed for the industries.

River action plan for Nag and Pili river was prepared long back by NEERI. It had also organized a workshop for lake conservation in Nagpur in 2004.

My vision for the city is that development should be done so as to promote peace, prosperity and togetherness, paving way for clean and green Nagpur.

The strengths of the city are space availability, central location, availability of fertile land and excellent education facilities. The main areas of weakness are lack of public transport, lack of good attitude in the citizens and a weak service concept. The amount of open spaces is not in line with the expanse of the city. This should be increased. The sewage system is not well planned, and leads to choking of drains. There is also lack of adequate treatment facilities.

Stakeholder 4

Given the stakeholder's current profession/business/interest, the focus area of discussion was **environment.**

Stakeholder's comments

The key strengths of the city are its greenery, educational facilities and peacefulness. The pollution levels are also tolerable. The main areas of weakness are excessive horizontal expansion without developing the existing land in the city core. There is also lack of public transport, employment

opportunities due to low economic/industrial growth.

In terms of municipal services, the water supply is good, sewerage system is all right, but electricity shortages are a problem. As far as drainage is concerned, there is repeated choking and flooding in certain areas and needs improvement.

Stakeholder 5

Given the stakeholder's current profession/business/interest, the focus area of discussion was environment.

Stakeholder's comments

The main areas of strength for Nagpur are its location, sustainable development, as both business and people are coming to the city at a similar rate. There seem to be some good signs for expansion.

The weak areas are that the municipal services are much below citizen's requirement and need a revamp. In fact, they are getting worse with time. The street sweeping services are not good. Also, the service quality is not in line with the taxes. Especially, the property tax levels are very high.

Stakeholder 6

Given the stakeholder's current profession/business/interest, the focus areas of discussion were culture and heritage.

Stakeholder's comments

The Central museum in Nagpur is owned and managed by the state government. As far as heritage structures are concerned, there is a list of about 200 buildings marked as 'heritage building'. These are those buildings, which are 50 years old or even older than that have a historical, documentary (university) or treasure significance (museum). But often, there are vested interests in listing of heritage buildings.

City's weak area is lack of funds for conservation of museum and other buildings, as compared to other states. More focus is needed on maintenance of lakes and gardens. There should be focus on objects of conservation rather than structures/buildings holding/keeping them.

NMC must pressurize the state government for funds for conservations. These can also be sought from the city's rich people and industrialists.

Stakeholder 7

Given the stakeholder's current profession/business/interest, the focus area of discussion was tourism.

Stake holder's comments

City lacks the right culture and attitude for development. There is lack of courage in government

officials to take strong and big steps. We need to start dreaming **big** now. The political environment in Nagpur is quite unfavourable for rapid development.

The positives for the city are congestion-free roads and its great connectivity and central location.

Nagpur's future would be determined by three sectors – tourism, industries and trading. 1988 was the year of economic and industrial upsurge. There was power surplus situation in Maharashtra. Later in 1992-93, there were various labour issues, union problems etc. Now there is a need for some **big** industries that can attract other allied industries and generate employment.

For that we need better flight connectivity. International flight connectivity, especially to cities like Singapore would place Nagpur on the international map.

MIHAN is creating a wave of development. Its anticipation itself is leading to development and market activities.

Hotels here as compared to other cities are very flexible. They can act as cheaper training or conference centres as compared to cities like Mumbai and Delhi. Infrastructure is not a constraint for the city.

My vision for Nagpur is that it should become and IT and industrial hub. But for that, we need future oriented planning. We also need to make provision for increased expansion and density. NMC needs to become citizen oriented. We need clear policies and faster processing of applications.

Stakeholder 8

Given the stakeholder's current profession/business/interest, the focus area of discussion was **local economy.**

Stakeholder's comments

The city can become a cargo hub, but there is lack of political will and vision for the same. As a developer I feel that development control rules are not practical and height control rules are too stringent. The plot sizes are too small and hence adequate parking facilities cannot be provided in small plots.

Nagpur's strengths are cosmopolitan and yet peaceful atmosphere. The road and rail connectivity is great but there is need for better flight connectivity. City's weaknesses are its politicians, who don't have any vision. They have no concern for city development. Labour problems are not resolved, instead aggravated by them. Materials and labour are not a constraint; they are readily available

Load shedding can become an economic constraint. Forests and mines are critical part of the city; they should be taken care of. NMC has very high tax rates for rented properties. There is simply no logic for such policies. Such things prevent big corporates from coming into the city.

Planning needs to be dome at two levels - macro and micro. Subsidies and exemptions need to be given to invite IT companies. Land should be developed in alignment with economic development and transport planning. Planning for existing and new areas need to be separated as their needs and concerns are very different. We also need to decide clearly the pattern of development for Nagpur – whether vertical or horizontal development and prepare the details of plans accordingly. NMC/ NIT should also define building norms in accordance with plot size or density and once the norms are defined they should be properly adhered to.

Stakeholder 9

Given the stakeholder's current profession/business/interest, the focus areas of discussion were land use and planning.

Stakeholder's comments

Strengths of the city are availability of land, especially the unutilized government land. The roads are good, local parks have been maintained well. There is lots of forest area. The city has a lot of intelligentsia in the form of retired professionals and IAS officers settled here.

Key problems are lack of public transport, concern for urban design, poor core infrastructure and numerous un-authorized layouts. There is lack of planning for shopping streets and mixed land use provision.

Priority should be given to authorised layouts while providing basic infrastructure. We need to retain the **green** spaces. NMC, NIT, power boards etc., all the service providers should have a common citizen interface. Planning of satellite towns like Kamptee should be as good as the core city. Better transport planning is needed in new areas. Citizens must be involved in the planning process.

My vision for Nagpur is that it should be known as a garden city.

Stakeholder 11

Given the stakeholder's current profession/business/interest, the focus area of discussion was **tourism.**

Stakeholder's comments

Ever since Nagpur has become a part of Maharashtra, it has been a neglected city. Local politicians only have vested interest.

City's strengths are its roads, excellent places to stay and eat.

But tourism is not developing to its true potential. Some of the reasons being. Local tourist guides are not there. The key government organization for development of tourism, MTDC, has only 12 crores allocated for the entire state, most of which is spent in western region of the state and promotion of their own resorts. They don't really have concern for tourism in general.

Public transport is an area of concern in the city. People are forced to own private vehicles. People who own large spaces of land (e.g. PKV) are not ready to develop them, and hence they are lying vacant unnecessarily. NIT has maintained the green spaces relatively better as compared to NMC.

Nagpur should become the 'Gateway to central India' or 'Gateway to the tiger country'. Airport for international flights should also be encouraged.

Stakeholder 13

Given the stakeholder's current profession/business/interest, the focus area of discussion was **environment.**

Stakeholder's comments

Nagpur nature conservation society is an NGO working with students for creating environmental awareness. It mainly deals with solid waste management.

In Nagpur, there is a problems are choked drains. Actually, there is no need of drains in the city, as there is a natural drainage pattern. If they are constructed and not maintained properly, they breed mosquitoes.

Rain water harvesting needs to be encouraged. All land has concrete or tar, so there is not much scope for seepage. There is also need to create local soak pits.

Maintenance of parks also needs to be taken seriously. There is lack of planning for open spaces in Nagpur. A proposal has been floated to convert Ambazari lake and surrounding area into a bird sanctuary.

My vision for the city is - 'Nagpur as gateway to eco-tourism' and become an example for other cities in environmental sensitivity. More consultation should be done for development plans. Co-ordination needed between plantation, electricity and telecom agencies is critical for the sake of keeping good roads in good condition.

Stakeholder 14

Given the stakeholder's current profession/business/interest, the focus area of discussion was **culture** and heritage.

Stakeholder's comments

Nagpur was known as city of lakes and gardens in the 18th century. It is famous for three things - oranges, RSS and diksha bhoomi.

It is important for citizens to know their past, their city's history. More than 200 building have been listed as heritage properties. They should either be preserved or uplifted in such a way that people are able to see and appreciate them. For this coordination between heritage committee, NMC and NIT is needed. Approval should be taken from heritage committee before giving the building permission and not past facto. Building norms around heritage structures must be controlled, especially in terms of height, minimum distance between structures etc.

City centre should have museum, which describes everything about the city. Trees for roadside plantation need to be chosen carefully. I would like Nagpur to continue to be known as the 'Orange city'. Roadside plantations of orange trees should be done.

Stakeholder 15

Given the stakeholder's current profession/business/interest, the focus areas of discussion were **health** and economy.

Stakeholder's comments

Business activities have been growing but infrastructure has not been growing accordingly. The basic municipal infrastructure is in place, water supply services are satisfactory.

The key strengths of the city are its roads, greenery, cleanliness and an overall liveability. But

sustainability of the city is a question. Numerous professional education institutions also there in Nagpur, but none of these are top ranking institutes as per national standards.

There is no clarity about the aspect of responsibility. There is need for a system to ensure quick processing of grievances. The main areas of weakness are the on-going power crisis and poor public transport. Power crisis would be a limitation for everyone, especially economic development. With respect to public transport, reliability is critical. Besides this, there is also scarcity of professionally qualified people and the work attitude not up to the mark. As big corporate houses are eyeing Nagpur, we need more professionalism.

IT companies are already looking for spaces outside Bangalore and Hyderabad. When they consider Nagpur, they'll look out for basic facilities like power supply.

Medical Infrastructure: Nagpur has a huge potential to be developed as a regional medical hub. It would be able to cater to a population of 40 lakhs in central India. There are not many quality health care facilities available in the city. Corporate houses like Wockhardt have already set up a facility in the city. CARE is also expected to set up shop soon. Corporate should set up facilities themselves, rather than following the franchise model, to ensure quality services. There are lots of private doctors, nursing homes available in the city.

City being small in size and smooth traffic situation, excellent emergency care is possible, unlike bigger metros. Air connectivity is also critical for medical facilities. Road network with neighbouring states need to be developed better.

Stakeholder 16

Given the stakeholder's current profession/business/interest, the focus areas of discussion were sectors of local economic development, long term planning for traffic and transportation and cost recovery of municipal services.

Stakeholder's comments

We need to plan for extended parts of the city. In the given area, greenery in good proportion. But the spaces reserved for afforestation have not been developed so far.

Vanrai, (a NGO in Nagpur) was set up about 15 yrs ago. It mainly works in the area of roadside plantations. It uses its own funds for this purpose. We need playgrounds in the city. Rainwater harvesting should be made a part of building norms. There should be a cap on population allowed in the city. Government's focus should be on rural areas rather than investing more money in the urban areas, which already have abundant resources.

24x7 water supply is too ambitious an objective for NMC. Similarly for power supply, we should not target 24 hours power supply.

My vision for Nagpur is that it should become an ecologically sustainable and friendly city. The development must be based on values. People in Nagpur value relations. For that, we should retain Nagpur as a second tier city.

Stakeholder 17

Given the stakeholder's current profession/business/interest, the focus area of discussion was traffic

and transportation.

Stakeholder's comments

Traffic signal and junction management in Nagpur should be improved. This can be done by introducing closed circuit television at critical junctions, introducing area traffic control, marking clear zebra lines, stop lines and other road markings properly. We should improve road engineering/designing at busy intersections like Kadbi Chowk and Vaishnodevi Chowk. There should be synchronization of traffic signals.

For decongestion of roads and carriageways, we should identify parking and no-parking zones, introduce pay and park system and construct a few parking plazas. We should also have hawking and no-hawking zones identified in the city. We should have sub-ways at important market places such as Variety Chowk, Jhansi Rani square, C A road and Residency road. We need flyovers at W H road, C A road, rail-over bridges etc. We also need traffic parks to get children educated on road safety and discipline. We should introduce electronic tool systems, noise screens on flyovers. We also need a website for providing information on car-pooling, to minimize vehicular congestion.

To increase safety levels on the roads, we should have about 15 - 20 mobile vans at major junctions to control speeding vehicles. We should equip the traffic police with speed guns and breath analyzers and construct more speed breakers. Even notional speed breakers may do a part of the job.

Stakeholder 18

Given the stakeholder's current profession/business/interest, the focus areas of discussion were **water** supply and public transportation.

Stakeholder's comments

Nagpur should have its own dedicated sources of water supply. Rahari and Kochi Projects should be expedited to reduce dependence on irrigation department.

Increase in vehicle ownership will only put more pressure on parking spaces. We should have more parking lots, basement parking and multi-level parking. A reliable public transportation system is also required.

To ensure economic development in the city, we definitely need to improve the power supply.

Stakeholder 19

Given the stakeholder's current profession/business/interest, the focus area of discussion was **local economic development.**

Stakeholder's comments

Without adequate power supply to a city, no economic development is possible. Considering the shortage of power, illuminated hoardings should be banned. 24x7 water supply is not required, as it would lead to wastage. But at the same time, just one hour of water supply is insufficient.

There is need to increase public transportation coverage. There should be train connectivity between north and south Nagpur. Flyovers should be constructed at appropriate places. Roads should be widened.

Taxes are very high in Nagpur. Amravati and Gondia are growing faster because of lower taxes. We need to improve tax collection efficiency to spread tax burden over a larger population. There should be single window clearances for industries. Agro-processing industries should be encouraged and there should be compulsory rain water harvesting. Also, adequate compensation should be paid for land acquisition.

Stakeholder 20

Given the stakeholder's current profession/business/interest, the focus area of discussion was **local** economic development.

Stake holder's comments

As 60% of the oranges produced in the country are from the region in and around Nagpur, food processing can be a major industry here. Nagpur can also emerge as a major textile hub. Satyam and L&T Information Technology have already made plans to use Nagpur as a centre for software development. Steel industries can be developed around Nagpur, as there are about 200 rolling mills in the region, within a 30 km radius of Nagpur. Nagpur can also be developed as tourist hub for wild life tourism.

Housing availability in Nagpur is not a problem. In terms of infrastructure, water resources need to be upgraded. Drainage system is very old and needs to be improved and sewerage system needs to be improved. Unauthorized constructions need to be stopped. There is strong need for a public transportation system like metro rail. Outer ring road also needs to be developed.

Private universities need to be encouraged especially private engineering colleges. We need more pay and park facilities. Power plants should be set-up around Nagpur to solve the power problem. Also, cargo hub (MIHAN) project needs to be expedited. Single window clearances for industries are also required. This all needs a strong political will, which is lacking in Nagpur. FSI needs to be increased and enforcement of building plans and related laws should be enforced strictly.

My vision for the city is that Nagpur should be industrially developed and at the same time should be a big village. Big village - because development of concrete jungles leads to deterioration in human relationships.

Stakeholder 21

Given the stakeholder's current profession/business/interest, the focus area of discussion was **local** economic development.

Stakeholder's comments

Nagpur losing out to Raipur in the logistics business. This mainly because labour here is very organized and very expensive compared to the surrounding areas. Also, land here is no longer cheaper as compared to Chattisgarh.

Transport hub project (MIHAN) is being over-hyped. Nagpur, besides its geographical location, has no strong factor for it to be developed as a transport hub. The project is expensive and will lose out to cheaper alternatives. Cost competitiveness will drive economics of the project and MIHAN is not favourably placed in that respect. MADC is profit oriented rather than development oriented.

IT potential for Nagpur is also exaggerated; Nagpur cannot be another Bangalore. A positive attitude of the educated class and good law and order situation will drive economic activity in Nagpur. It is very safe for women and women's participation in labour force is very high. Health city as a vision is also far-fetched as quality of doctors here is very poor.

Stakeholder 22

Given the stakeholder's current profession/business/interest, the focus area of discussion was **transport and traffic management.**

Stakeholder's comments

There is a steady rise in vehicle ownership in the city. People have migrated from bicycles to two-wheelers in a very short time. In the coming years, there will be only two-wheelers and cars on the roads. Bicycles will disappear from the city. There will be congestion on the roads of the city because rising vehicle population. There is a need to improve public transportation system in the city. It is said that Nagpur requires 800 buses for public transport and there are less than 200 buses running.

There is a need to privatizing public transport in the city.

Another problem is with regard to road safety. The road engineering in the city at some of the major junctions needs to be improved to prevent accidents from occurring.

ANNEXURE F: STAKEHOLDER'S WORKSHOP ON 5TH FEBRUARY 2006

Date: 17th January 2006

Agenda: Information session on JNNURM and CDP preparation process.

Attendees: Representatives of the press and electronic media

Time: 5 p.m.

Venue: Nagpur Municipal Corporation premises

The Process

This workshop was held to bring together municipal decision makers and the stakeholders to arrive at a consensus to define the vision and mission to enhance economic growth and quality of life for all citizens of Nagpur. The stakeholders were from diversified backgrounds ranging from NGOs, professionals, industrialists, environmentalists and educationists. The special invitees were Dinesh Waghmare (Chairman Nagpur Improvement Trust), Lee Baker and Niels Van Dijk representing United States Agency for International Development (USAID).

The session started with a welcome address by the Commissioner, Nagpur Municipal Corporation Lokesh Chandra. He unfolded the context and concept of the City Development Plan (CDP). He briefly explained the objectives JNNURM and path traversed so far in the preparation of the City Development Plan.

Dr. Ravikant Joshi of CRISIL Infrastructure Advisory then presented before the audience the key findings of the individual consultations conducted over the previous two weeks and juxtaposed those findings with the views of NMC officials on every aspect of urban life. The objective of this presentation was to put in perspective the aspirations as envisaged by NMC officials for the city and the citizen's own aspirations on various issues.

Group Discussions

The first session created an understanding amongst the NMC officials and the stakeholders regarding what JNNURM was about, why CDP was important, what are the key facts that need to be kept in mind during envisioning and where Nagpur stands today. The stakeholders were divided into eight focus groups:

- ➤ Water supply, sanitation, sewerage and solid waster management
- Roads, traffic and transportation
- > Slums and urban poor
- > Urban environment, rejuvenation of water bodies and gardens
- > Tourism, culture and heritage
- ➤ Local economic development
- ➤ Land Use and housing
- ➤ Health and education

These focused areas had come up during earlier discussions with NMC officials and individual stakeholders. The entire gathering was divided into these groups depending upon their preference. There was a member from the CRISIL team present in every group just for observation purpose and noting down the key points. The groups were asked to discuss on following three areas:

- ➤ An overall vision for the city of Nagpur
- The vision of the focused area (sector) of the group
- > Strategies to achieve the same

They were also asked to make a presentation on the same; the presentation and strategies presented by groups are annexed.

The workshop concluded by a brief summary of the entire visioning exercise by Municipal Commissioner Lokesh Chandra. The stakeholders were informed about the future course of action and were invited for feedback on the entire session.

Schedule of the Workshop

Session Objective

This session aims to bring together municipal decision makers and the stakeholders to arrive at consensus to define the vision and mission to enhance economic growth and quality of life for all citizens of Pune.

Session Plan

Schedule of the Workshop

10.30 am: 11.00 am: 11.30 am:	Registration Address by Municipal Commissioner Presentation on preliminary findings by CRISIL Infrastructure Advisory
12.00 pm to 12.15 pm	Group Assignments
12.15 pm to 1.30 pm	Group Discussions
1.30 pm to 2.30 pm	Lunch
2.30 pm to 4.30 pm	Presentations by different groups
4.30 pm to 5.00 pm	Summary of Findings of the Workshop and road-map for the future
5.00 pm to 5.10 pm	Address by USAID Representative Lee Baker
5.10 pm to 5.20 pm	Address by USAID Representative Niels Van Dijk
5.20 pm to 5.30 pm	Vote of Thanks by Prakash Urade, Executive Engineer, NMC

List of Participants

The following is the list of NMC officials and stakeholders who participated in the workshop:

Sr.	N	0	m.i. i
No.	Name	Organization	Telephone
1	A K Gour	NIT	NA
2	A. H. Nanoti	NMC	0712-2221587
3	A. N. Barhate	NMC	0712-2567001
4	A. R. Borse	MHADA	0712-2565692
5	A. R. Gohatre	MSRTC	0712-2526101
6	Abhijeet Jamkhindkar	HDFC Ltd.	9822593573
7	Ajay Ramteke	NMC	0712-2567001
8	Ajay Sancheti	SMS Ltd.	9822566969
9	Amitabh Khanna	VASE	9823051648
10	Amol H. Chaurpagar	Garden Dept. NMC	9823391762
11	Anil Sonawane	CONCOR	9850388813
12	Arun Dolke	VNHS Centre	9371198456
13	Arvind Dongre	Dy. Dir. Education	0712-2560105
14	Arvind K Thakkar	Thakkar and Thakkar developers and engineers	NA
15	Ashish Roy	Hitavada	
16	Awantika Chitnavis	Vidarbha Heritage Society	9422903329
17	Azizur Rahman	SDE (NMC)	0712-2567001
18	Bharti Azad	YUVA	9372377011
19	D. D. Jambhulkar	NMC	0712-2567001
20	D. L. Naware	VED	9823013590
21	Deepak kr. Gupta	Nagpur Patriot, JAYCEES	0712-2557676
22	Dilip Gundawar	Joint Directorate of Industries	0712-2560335
23	Dinesh Waghmare	NIT	NA
24	Dr. Ballal	NMC	0712-2567001
25	Dr. Dilip Tambatkar	Shahar Vikas Manch	9370277753
26	Dr. Gajbhiye	Health Services GOM	9422108246
27	Dr. Kishor Taori	IMA	9823274079
28	Dr. M. U. Kitan	DGMC	9423121100
29	Dr. Prashant Nikhade	IMA	9822221938
30	Dr. Vinayak S. Deshpande	PGTD of economics N.O.	0712-2237042
31	G. D. Jambhulkar	NMC	9823041398
32	G. G. Khot	NMC	9823128269
33	H. H. Wajgaokar	NMC	0712-2567001
34	Kalpana Shende	Corporator	0712-2567001
35	LM Borikar	MSEDCL	9850396701
36	M. H. Talewar	NMC	0712-2567001
37	M. H. Zanzad	MTDC	0712-2533325
38	M. R. Gupta	NMC	0712-2567001

39	M. V. Bhagat	GMDIC Nagpur	0712-2565874
40	Mahendra Bhusari	Desonatti	
41	Mangesh Kashikar	JMCCI Gen. Sec.	9422804154
42	Manish Soni	Navbharat	9422102425
43	Manoj Choube	Bhaskar	
44	Maya B. Shende	Rami Mahila Bachat Gat	0712-5662962
45	Meena Bhagwatkar	NMC	9823376062
46	MG Patil	Nagpur University	NA
		Thakkar and Thakkar developers and	
47	Miloni Thakkar	engineers	NA
48	Mr. Ganvir	NMC	9823063952
49	Ms Leena S. Buddhe	Centre for Sustainable Development	9372391202
50	Ms R. P. Lonare	PWD	9422110594
51	Ms. Sudha	NMC	0712-2567019
52	N. P. Waswani	NIT	0712-2527563
53	N. S. Kshirsagar	RTO	0712-2549240
54	Nandkishore Sarda	Sarda Ispat	9823070072
55	P. B. Sahastabhojanee	VNHS Centry	9422106238
56	P. M. Pande	W. B. P. Nagpur	9822721328
57	P. M. Pande	PWD	9822721328
58	P. P. Godbole	NEERI	0712-2522246
59	P. S. Dutt	NEERI	0712-2249758
60	P.G. Gadekar	Dy. Director, publicity	0712-2565108
61	Paramjit Ahuja	Vidarbha Heritage Society	9822200900
62	R. M. Bhoyar	PWD	9422844138
63	R. N. Hotwani	PWD	9423104766
64	R. S. Singhvi	Indo Rama	9890006500
65	R. V. Warke	NMC	9823126489
66	Rajesh Saraf	Nagpur Industrial estate Co-op. Society Ltd. Uppalwadi	9823015956
67	Ramlal Somkuwar	Bahujan Zopadpatti Vikas Mahasangh	NA
68	S S Chavan	MJP	9822713750
69	S Y Mohite	NMC	0712-2567001
70	S. B. Jaiswal	NMC	9823172908
71	S. E. Choudhary	Lambent	9823029314
72	S. G. Dahiwade	NMC	9823360439
73	S. H. Gujjelwar	NIT	0712-2540797
74	S. J. Dobe	NEERI	0712-2249758
75	S. K. Sathe	RTO	NA
76	S. S. Doifode	Institute of Engineering	9423408073
77	S. S. Hastak	EC (NMC)	0712-2567001
78	S. S. Lohokare	MHADA	0712-2565649
79	S. S. Ramteke	EDCI	0712-2595410
80	S. Y. Raut	NMC	9823350544

81	Saleem	NMC	9823259555
82	Sandesh Ramteke	EDCI	0712-2591786
83	Satchit Bhandarkar	IIXW Nagpur	0712-2248421
84	Shakeel Niyazi	NMC	0712-2567001
85	Sharad Rode	MJP	9422111230
86	Shekhar Wankhede	Green Foundation	9372333274
87	Shobha Phanshikar	Vidarbha Concerned Citizens Forum	0712-2531250
88	Shubhrnshu	SEC Rly	9422147301
89	Subhash Rode	Jt. Dir. Industries	0712-2560335
90	Sujata Kadu	NMC	0712-2567001
91	Suneeta Aloni	NIT	9823323670
92	Sunil Raisoni	Raisoni Group	0712-5617181
93	Sunil Toye	IIA Nagpur	9823108106
94	Suradkar	NMC	0712-2567001
95	Suresh Deo	NIT	9823326954
96	V. N. Kolhe	NMC	9823063961
97	V. S. Sharma	NIECS	9422149176
98	V.K Jain	Dy.DI, GoM	NA
99	Victor Friectas	Christian Forum	NA
100	Vijay Chaurasia	MSRTC	0712-2526809
101	Y. T. Ramteke	NMC	0712-2567001

III. PRESENTATION C

Presentation made during the stakeholders' visioning workshop (5th Feb 2006)

City Development Plan-NAGPUR



February 5th, 2006

Structure of Presentation

- Context of JNNURM
- Status on CDP Process
- Agenda for the day
- Perception Level on Cities needs
 - → NMC Officials
 - → Citizens and Stakeholders
 - → Focus Areas
- Visioning for Nagpur the process

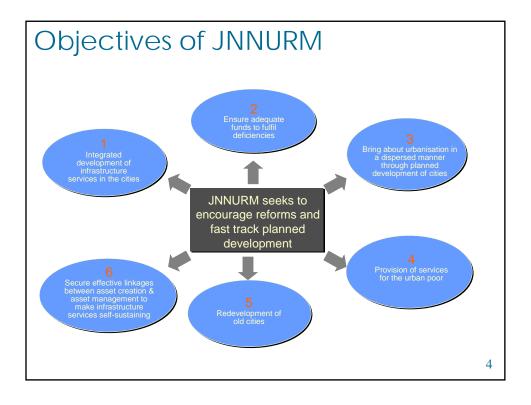
Context of JNNURM

⇒ JNNURM seeks to develop cities that are aligned with citizens' interests

⇒ JNNURM will

- → Support financial investments required by the city
- → Seek reform commitments from ULB and state government to ensure sustainability

3

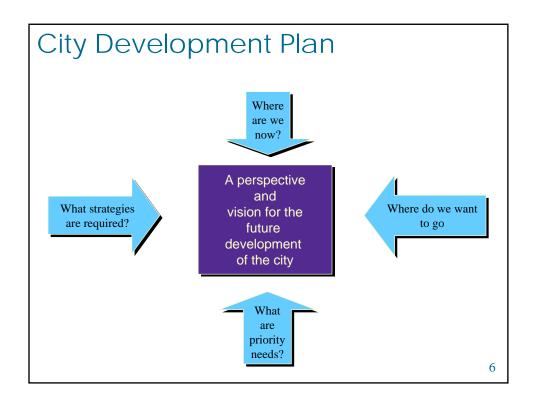


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CDP in Context of JNNURM

- JNNURM seeks to develop cities that are aligned with citizen interests
- ⇒ JNNURM will
 - → Support financial investments required by the city
 - → Seek reform commitments to ensure sustainability
- ⇒ Cities are expected to articulate
 - → their vision
 - → their plans
 - → their commitment
- ⇒ Through a City Development Plan

5



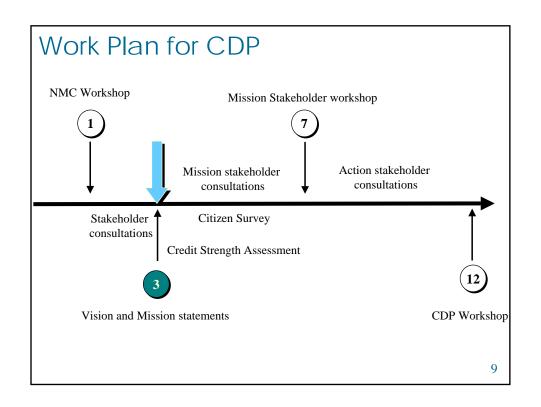
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JNNURM expects cities to achieve

- Access to minimum level of services
- City wide (coordination among various agencies) framework for planning and governance
- Modern and transparent accounting, budgeting and financial management
- Financial sustainability- User charges concept
- Transparency and Governance
- E Governance for all core functions

7

Formulating a City Development Plan Step 1 Step 2 Step 4 Step 3 **Future** Strategies for **City Investment** perspective and City Assessment Plan development vision ✓Direction of change and✓ Options and ✓ Estimate level of ✓ Opportunities expectation strategies investment √Strengths ✓Economic Vision ✓ Link with reform ✓ Financing options √Risks ✓Services Vision agenda ✓ Criteria for ✓ Weakness prioritisation ✓Unmet demand/gap 8



Status on CDP

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Status on CDP Process

- Kickoff workshops on CDP
 - → Government and NMC officials
 - → Industry associations
 - → NGO's, Clubs, Media, people's representatives and academicians
 - → General Body of NMC
- Rapid City Assessment
- First stakeholder workshop with NMC officials
- Personal interviews with a sample of stakeholders
- Soliciting citizens participation through:
 - → Suggestion box at all NMC ward offices and emails
 - → Essay competitions in schools
 - → Thought provoking Newspaper articles and editorials

11

SWOT for Nagpur City Strength **Opportunities** Centrally located in India - large catchment · Low-cost high-skill labour is available for spread in all directions development of services and knowledge Rich mineral resource base based industries Well connected to all major cities in India · Location allows for development of a through road, rail and air networks distribution hub Excellent medical and educational facilities · Enough space available in the city to available in the city develop IT parks, health city Clean and green image of the city Weakness **Threats** · Landlocked cities- industries needing sea transport are not feasible · Has a low profile and image Delay in implementation of MIHAN project may · Inadequate city infrastructure and amenities decelerate the expected economic growth · Lack of employment opportunities for the · Deteriorating power situation may discourage large educated young population rapid economic development 12

Agenda for the day

Objective

To define vision/ mission statements

Agenda

- Discussions on vision and mission for:
 - → City
 - → Sectors
 - → Water Supply, sanitation, sewerage and solid waste management.
 - → Roads, traffic and transportation
 - → Land use and housing
 - → Urban poor and slum development
 - → Urban environment, gardens and conservation of water bodies
 - → Local economic development
 - → Education and Health and social infrastructure
 - → Tourism, culture and heritage
- Design sector mission statements keeping in view the city vision

15

Agenda

Discuss the facts and Issues relevant to the sector

Develop a Vision that addresses the following aspects
 20mins

- → Economic development
- → Equity
- → Sustainability
- Identify actions needed in focus area to achieve the vision
 30mins
 - → Focus on the agreed areas
 - → Narrow down on disagreements
 - → Identify the broad action areas
 - → Broad Action Plan and Road Map for Implementation
- ⇒ Presentations by the focus groups **post lunch** covering 10 mins each
 - → Vision for the city
 - → Sector vision
 - → Strategies to achieve the vision

16

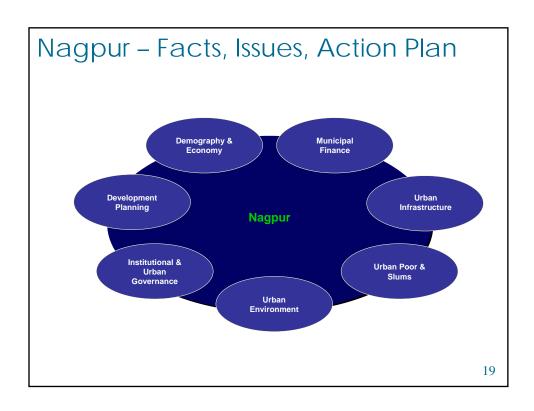
Next step in CDP process

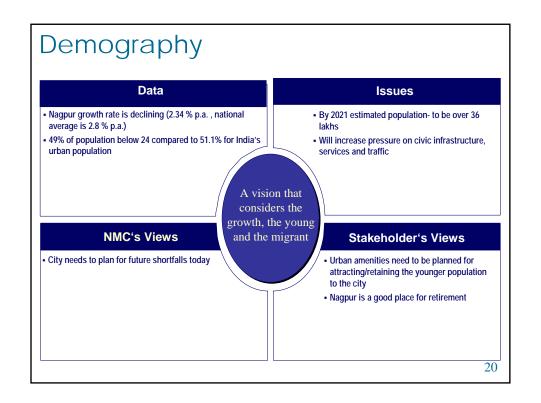
- Identifying priority actions to achieve missions
 - → Consultations with mission stakeholders
 - → Data collection and scenario analysis
 - → Service performance and demand survey
 - → Third workshop to determine priority actions

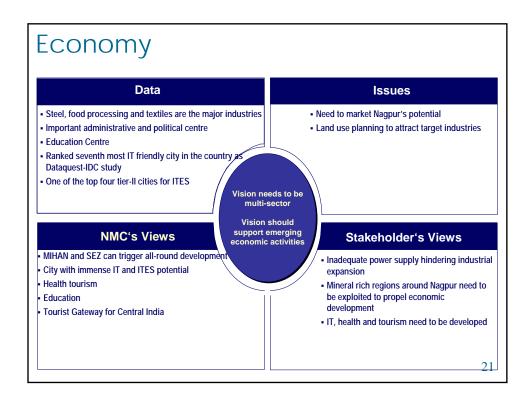
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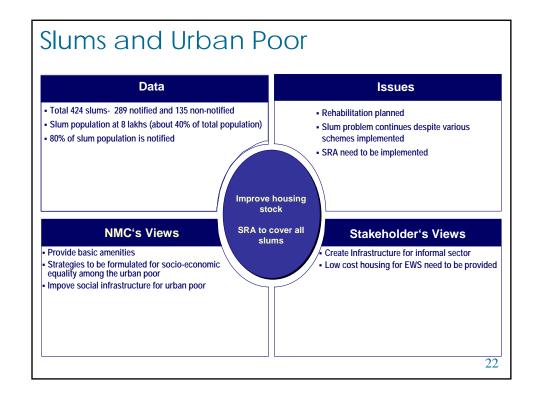
Nagpur –A City of Your Vision

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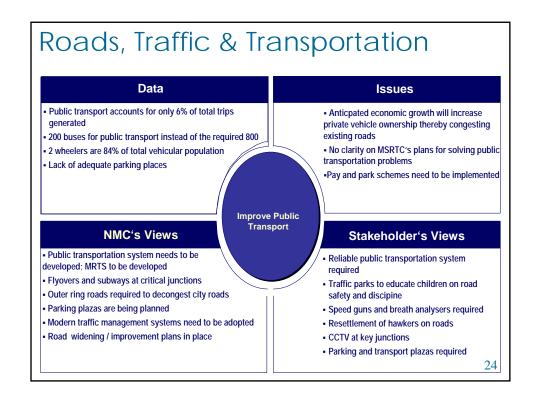




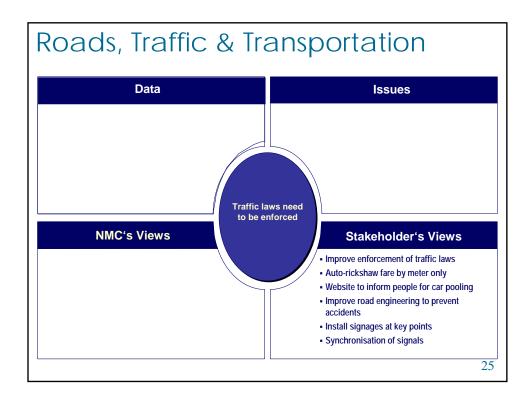


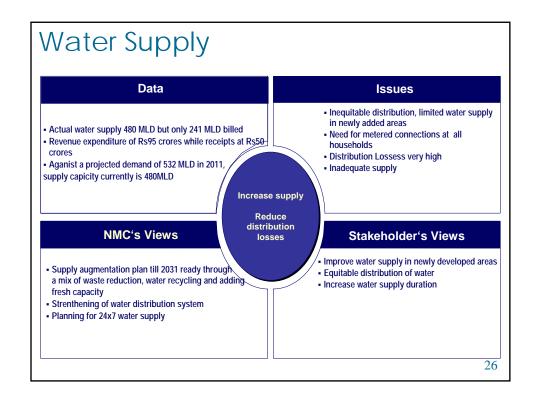


Municipal Finance Data Issues Octroi constitutes 47% of total revenues • Over dependence on a single source (octroi) Property taxes and water taxes contribute 18% and 16% of • Non-tax income negligible · Levy user charges to further increase Establishment expenditure is 52 % of total investment capacity expenditure Rs70 crores of revenue surplus in FY05 and surplus sustainable Pursue user charges Leverage Municipal revenues further to **NMC's Views** Stakeholder's Views plan more capital expenditure Identify alternative sources of revenue Rationalize octroi rates Computerization of Octroi and Tax collection to • Do not penalize tax payers with higher rates improve efficiency to make-up for revenue shortfall, instead Introduce user charges for solid waste management improve collection Rationalize property tax and simplify property tax computation 23

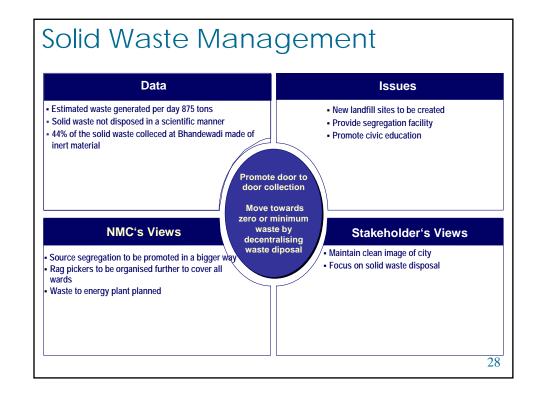


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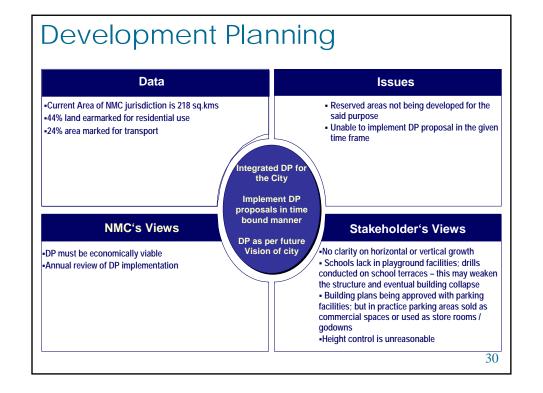


Sewerage Data Issues Sewerage lines get choked frequently 60% of city area have a sewerage network Untreated sewer polluting local rivers Covers 70% of the population • Inadequate sewerage treatment plants · Length of the sewer lines is approx 1100 kms Sewerage not covered by direct user charges • One sewerage treatment plant at Bhandewadi 279 MLD of sewage generated Improve Coverage **Enhance treatment** capacity **NMC's Views** Stakeholder's Views Improve public sanitation facilities in slum areas Explore decentralized treatment plants instead Aim 100% collection & treatment of of large capacities at one location Improve UGD facilities in added areas Improve sanitation facilities in slum • Maintenance of public toilets is poor; convert Sewerage treatment plant planned in north zone where most urban poor are them to pay and use concentrated Promote use of recycled waste water for non-potable industrial use 27



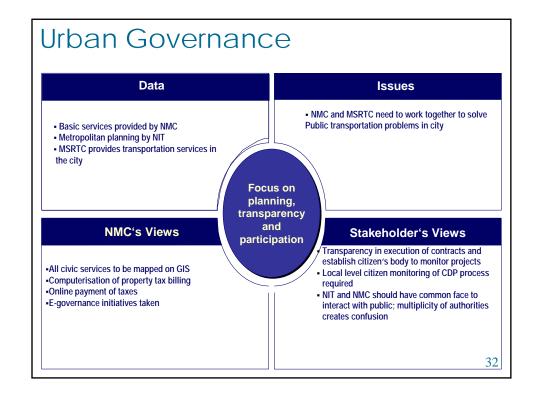
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Storm Water Drainage Data Issues • In the monsoon, there are problems of back flow Approx. 30-35 % of the Road Network is covered by storm in the sewers that lead to unhygienic conditions water drainage system of Open drain and closed drains. and outburst of epidemic · Storm water nallah at carry sewer water as well - Silting and Deposition of Garbage in the stream / Nallah Plan for comprehensive Drainage **NMC's Views** Stakeholder's Views Prevent ground water pollution Development of storm water drainage along the · Rejuvenation of Nag and Pili rivers Roads to prevent flooding Rejuvenation of Nag and Pili rivers and other nallahs to prevent pollution 29



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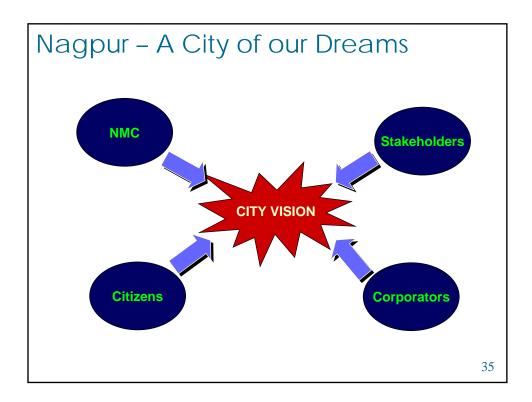
Urban Environment Data Issues • High level of air and noise pollution due to •SO2 NO2 concentration within limits but SPM high traffic concentration well above limits (2003 data) River and ground water being polluted due to • Day time noise levels exceed permissible limits inadequate and indiscriminate disposal of domestic sewerage Rejuvenation of lakes **NMC's Views** Stakeholder's Views Preserve and improve water bodies City of lakes and gardens Develop parks and gardens Lakes as areas of recreation and sports Rejuvenation of water bodies • Prevent further sewage discharge into river • Development should be done so as to promote peace, prosperity and togetherness... paving way for clean and green Nagpur 31



10

Culture, Heritage and Tourism Data Issues • Lacks infrastructure to support tourists influx like • Numerous sites in city of heritage and tourist importance • No effort to market Nagpur as a tourist gateway to Several forest reserves easily accessible from central India Nagpur airport now on international aviation **Tourist Gateway to Central India NMC's Views** Stakeholder's Views City can serve as tourist gateway for Central ✓Nagpur city should become a highly modern · Health tourism city like Singapore Develop facilities to promote cultural activities · Vision " Nagpur as gateway to eco-tourism" 33

Visioning process



Please remember..

- ⇒ We need to think beyond "us as individuals and our careers"
- ⇒ A sustainable future for Nagpur city is our focal point for discussion
- ⇒ There will be conflicts it is essential that we take all views into consideration

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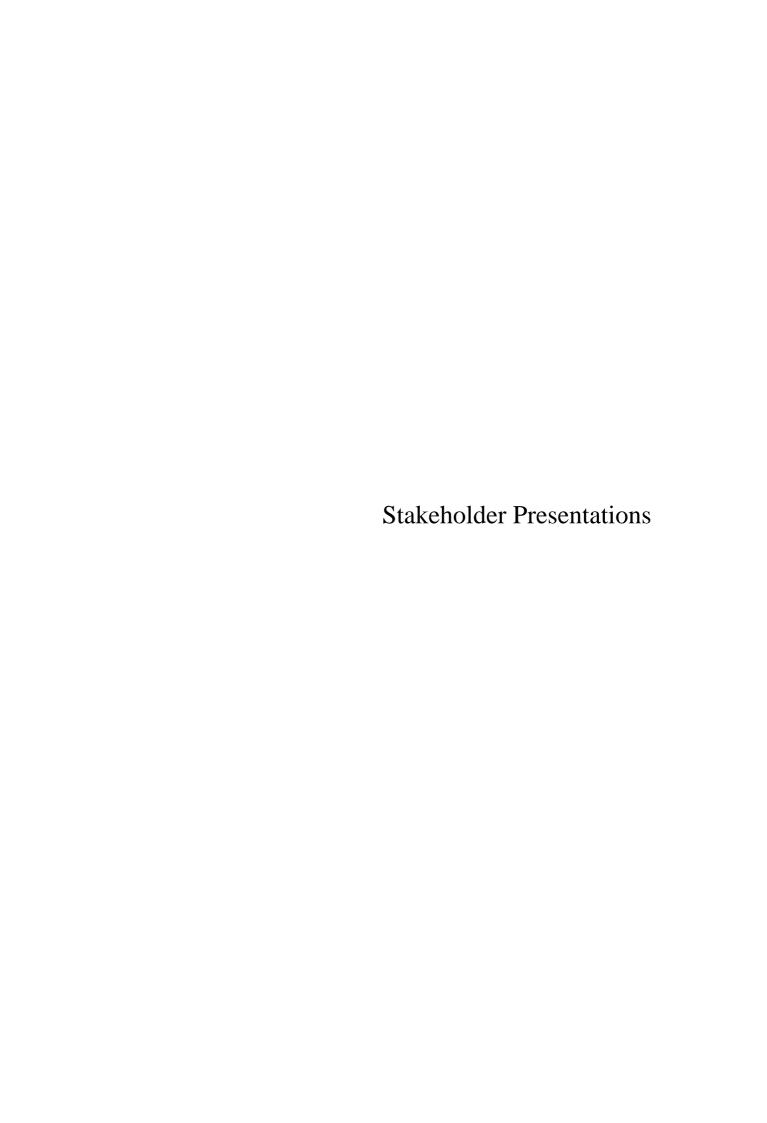
How can we together help in making Nagpur a better city?



Thank You

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Health, Education and social infrastructure Team Leader: Dr. Kishor Taori (President IMA, Nagpur)

Vision 2025

- Vidarbha as a separate state with Nagpur as a capital
- Health for all
 - population control
 - pollution control air, water and noise
 - Separate health budget as a necessity
- Collective responsibility to maintain
 - Environment
 - Hygiene
- Removal of gender bias
- Nagpur to be known as a medical and educational hub NMC as a the marketing agency
- · Patriotic and Crime free city

Health

- Convention center tercentenary promise
- Health tourism
 - Action expected: easy lease, land availability, tax exemption
 - Specialized hospitals cancer, trauma, eye, geriatrics, heart, transplant
- Maternity health care
- Health insurance
- Bio-medical waste management
- Disaster management
- Mobile ambulatory services (flying doctors)

Health

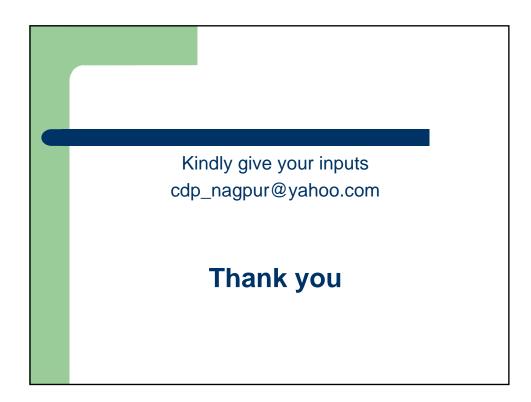
- Sanitary facilities for urban slums
- Sanitary system only one third is properly disposed by NMC
- Refresher course for health professionals
- Herbal medicines
- Naturopathy center
- Mobile lavaratories in large gatherings
- Number of hospital beds to be increased as per population ratio (1:1000)
- Rehabilitation services
- Virtual hospitals and networked hospitals

Education

- Primary education single nodal agency
- Privatization of corporation schools with NMC quota
- Military school for girls
- Public private partnership
- Cyber crime training center
- Education hub

Other social infrastructure

- Social donations are a necessity
- Child labour
- Networking of police stations
- Stations for quick social justice
- Slum development
- Beggar to be removed from all religious and public places



Group 3

Land use and housing

- Land use plan should be practical
- Provisions for religious buildings in D.P
- Marriage hall/ assembly hall/ stadia should be exclusively in the outskirts
- Provision for scrap yard in D.P

- · Major land uses
 - IT
 - Health
 - Education
 - Parking
- Bye laws
 - for interior designing
 - EWS Housing
 - Non conventional energy
 - Quake resistant measures
 - Disaster management
 - Fire fighting arrangements
 - FSI unreasonable

- Wider roads
- Buffer zone consisting of green belt around the city restricting horizontal development



,

Local Economic Development

1 Mangesh Kashikar JMCCI Gen. Sec.

2 Anil Sonawane CONCOR

3 Dilip Gundawar Joint Directorate of Industries

4 M. V. Bhagat GMDIC Nagpur5 Subhash Rode Jt. Dir. Industries

6 Dr. Vinayak S. Deshpande PGTD of economics N.O.

7 S. E. Choudhary Lambent
 8 Amitabh Khanna VASE
 9 V. S. Sharma NIECS

Vision for the city

City with a vibrant economy with employment opportunities and infrastructure to support good quality of life

Vision for the sector

- Growth themes Support value added and clean industries
 - IT and ITES
 - Food processing
 - Garments and Power looms
- Promote resource based balanced development
 - Agriculture, industrial and services

Vision for the sector

- Promote the city as a good commercial and distribution centre
 - Trade
 - Transport, Logistics
 - Export, Import services
- · Services sector in the city should cover
 - Health, eco tourism,
 - Entertainment
 - Hotels in all ranges
 - Sports

Key actions

- Improve the availability of land through provisioning and strategic relocation
- Promote zoning, land use (FSI) norms in DP for effective development of economy/ industries
- Increase city limits and bring in the concept of satellite townships
- Provide incentives for education, social, cultural development, R&D
- · Development should be people centric and reduce disparities
- Improve quality of Mass transport infrastructure, safety in transit, power (express feeders)
- Education institutions should be made to interact with the industries for better relevance.
- Be user and customer friendly with respect to taxation, evaluation and self evaluation
- · Outsource non core Municipal services to private sector

Thank you

Roads, Traffic and Transportation

CDP Nagpur

City To Be

- Safe Road network so safe city
- Well Connected to all parts of city
- High traffic awareness amongst citizens
- Efficient public transportation system
- Restricted zone for motorized vehicles; promote use of bicycles or non-motorized traffic

How we will achieve it

- Segregation of heavy vehicular traffic from city traffic
- Well defined lanes for all types of vehicles including bicycle paths
- Low level of private vehicular use by promoting public transport system
- Subject on traffic education at school level part of curriculum
- Adequate staffing of RTO and appropriate modern infrastructure – CCTV and automatic traffic system and area traffic control
- With proper enforcement of laws
- · Well identified parking zones
- Identified walking streets for heavy commercial areas
- Hawker streets on particular day of the week

- Provision of service road on major commercial roads with width greater than 30 m
- Planning for congested intersections by providing subways/flyovers/overbridges
- ROBs on railway level crossing

PRESENTATION BY GROUP V ON 'URBAN ENVIRONMENT, GARDENS AND LAKES'

Presented by group leader Paramjit S Ahuja, Architect¹

VISION

An 'autonomous city', that would facilitate the highest 'quality of life' possible. Such a city would be amongst the most liveable places in the country. This would be possible if the principles of sustainability are adopted as benchmarks for policy making.

An autonomous city would be one that would be, as far as possible, self-sufficient in so far as meeting its basic needs such as water, energy and food.

A liveable city would be one that would score high on parameters such as peace and harmony among communities, urban air quality, safe and sufficient water, safe roads, efficient public transport, quality education, quality health services, employment opportunities, economic growth, affordable housing, recreation facilities, cultural development, conservation of heritage and preservation of bio-diversity.

A sustainable city would be one that would meet the above present needs without compromising the ability of the future generations to meet their own needs.

ACTIONS NEEDED TO ACHIEVE THE VISION

Peace and harmony

- •Ensure economic well-being by adopting appropriate policies, some of which are mentioned in the following pages.
- •Distribute resources without discrimination amongst communities. Public distribution system should be strengthened and cater to the truly needy.
- •Promote mixed-use neighbourhood planning, i.e., residential activity with commercial. This results in late night life on streets thus promoting peace.
- •Enforce law and order. This will be possible if: sufficient manpower is recruited, the working condition of law enforcing personnel including housing is improved and if the
- •Police are sensitized to be people friendly.

Urban air quality

•Planning: proper zoning of activities in locating polluting industries/activities, etc.

•Introduce inexpensive and efficient mass transport that would use green energy. This will wean away a large proportion of the population from use of private vehicles.

¹ This note was submitted by the Group after the Workshop; there was no PowerPoint presentation made at the workshop.

- •Introduce legislation that would levy prohibitive tax/parking charges on private vehicle users. This will discourage use of private vehicles which in turn will improve ambient air quality.
- •Introduce a network of Greenways. These are cycle and pedestrian tracks in neighbourhood areas.
- •Urban forest: Trees are a component of road design. Plant evergreen species of trees. These absorb air pollutants (SPM, ozone, CO2).
- •Treat 100% solid waste and hospital waste.
- •Public transport systems should shift to green energy sources.
- •Landfill: capture methane gas from landfills to produce electricity (e.g. City of Vancouver Landfill Project). This will reduce greenhouse gas emissions.
- •Observe 1 day in a month as a Car Free Day. Promote street based activities on this day for all sections of the society through a community based effort. Use the occasion in promoting Nagpur as the cleanest, greenest and healthiest city in India.

Water and sanitation

- •Planning: zoning of activities for locating ground water polluting industries, etc.
- •100% treatment of solid waste, hospital waste and industrial waste. This will ensure that untreated waste is not discharged into the water ways.
- •Separate storm water and sewage water to check ground water pollution.
- •Prevent leakages in water lines.
- •Regenerate rivers, lakes, tanks, water bodies, wells, bores and other water sources for
- •Meeting the water needs of the city. Some of these water bodies are Naik Talao, Lendi Talao, Pandrabodi Talao and Pardi Lake. Bringing water from afar by depriving areas not related to the city is not sustainable. The existing water bodies such as Ambazari, Telankhedi, Gorewada, Sakkardara and Jumma Talao should be developed and protected.
- •Create new water bodies to augment water supply. It must be remembered that while Nagpur has 10 lakes, Hyderabad has 100.
- •Separate potable water lines from non-potable water. This will reduce the cost of water, increase availability and will lead to conservation of this scarce commodity
- •Bio-filtration: collect storm water in a pond and treat it using the plantation filtration method (e.g. Auroville international township, Tamil Nadu). Besides using the filtered water for non-potable purposes, the polishing pond will facilitate aesthetic as well as environmental benefits.
- •Introduce two stage treatment of solid waste: treat solid waste in-situ (in appropriately designed septic tanks) and discharge the effluent in sewer lines leading to polishing tanks for further treatment and re-cycling. This will pre-empt the need for expensive solid waste treatment plants and pay for itself through re-cycling and by its positive impact on environment

Energy

- •Diversify sources of energy generation: green energy from sun, wind, fuel cells, waste, etc. (e.g. 100 MW Solar Renewable Energy Power Plant, Nevada, US to be commissioned in 2007)
- •Mandate higher efficiency standards for all new areas, dwellings, appliances, business operations, existing and new street lights and hoardings.
- •Planning: earmark green energy generation areas in new developments (e.g. from PV cells).
- •Green lights: LED lights use 80% less energy and can last 6 to 10 times as long as conventional light sources. This can be put to use in traffic signals, etc. to save substantial costs in electricity and maintenance.

Roads and transportation

- •Vehicle downsizing is the core issue. Introduce efficient and inexpensive mass transport (that would run on green technologies) to reduce the vehicle density. This will make the roads safer and the environment cleaner.
- •Legislate: Introduce legislation that would levy prohibitive tax and parking charges on private vehicle users. Again, this will make the roads safer.
- •Introduce a network of Greenways. These are cycle and pedestrian tracks in neighbourhood areas. This will facilitate different ways to move through the city, i.e. an alternate mode of transportation and in effect safer roads.
- •Introduce a network of fully equipped Emergency Ambulance Service with common access number as an integral part of public transport for persons in need of immediate medical assistance.
- •Ensure that roads are engineered as per IRC norms. Services should be laid in unpaved boulevards so as to be accessible. Similarly, trees should be planted in the unpaved boulevards.
- •Enforce traffic rules and educate the citizens to follow them. Ensure sufficient manpower to enforce the rules. However, it must be remembered that no amount of enforcement will make a significant dent in reducing accidents if road design is faulty.
- •Roads should be well lit to make them safe. This should not mean that roads should be excessively lit.
- •Commercial areas such as Sitabuldi, Dharampeth, Sadar, Itwari, etc. should have only pedestrian access. Vehicular access to commercial areas should be permitted only up to the periphery. This will make shopping a truly pleasurable experience and a safe one at that.
- •Differently- abled persons should be able to access all amenities without assistance.
- •Planning: provide sufficient surface parking with easy ingress and egress.

EDUCATION

- •Municipal schools have the maximum reach. More importantly, this reach impacts the most vulnerable section of the society. Therefore, municipal schools must impart quality education. Providing mid-day meals will go a long way in increasing attendance in schools.
- •Municipal school buildings are in a pathetic condition. One has come to associate all that is sub-standard in education with municipal schools. There is no reason why there cannot be a turn around in this perception. Allocation of funds in the education sector must increase manifold. This should be invested on infrastructure and in better emoluments for the teaching faculty.

HEALTH SERVICES

- •Municipal hospitals / dispensaries have the maximum reach. More importantly, this reach impacts the most vulnerable sections of the society. Therefore, municipal hospitals / dispensaries must deliver quality health services. Again, providing mid-day meals in municipal schools will improve health of children.
- •Municipal hospital/dispensary buildings are in a pathetic condition. One has come to associate all that is sub-standard in health services with municipal hospitals/dispensaries. The allocation of funds in health sector must increase manifold. This should be invested on infrastructure and in better emoluments for the health workers.
- •A note of caution: Most politicians and administrators want visible progress during their tenure in office. Therefore, most of them are inclined to go for 'projects'. As an immediate return on investment (ROI) in education and health is not visible, these sectors are given the proverbial step-motherly treatment. This mindset must change if the mission objectives of JNNURM are to be realized.

Economic growth

- •Planning: land use planning and zoning to encourage diverse economic activity.
- •Land use and zoning to accommodate different lifestyles and business opportunities.
- •Payback: a roadmap to be drawn for meeting the costs for creating and maintaining the new amenities and services.

Housing

- •Planning: mixed use neighbourhood planning with low rise-high density residential and commercial activity on the city's edge.
- •Rent control act and land tenure policies directly impact housing development. Reforms recommended by committees set up for the purpose must be implemented.
- •Repeal ULCRA.
- •Legislate: incorporate eco-efficiency principles into new buildings and housing. Green building rating system to be adopted.
- •Ensure a portion of the housing stock serves lower income needs by making provision for lease of city owned land for non-market housing

Heritage, culture and recreation

- •Provide incentive to heritage property owners by way of waiver of property tax, grant of TDR, etc.
- •Create conservation fund for maintenance of heritage properties
- •Delineate and develop precincts and heritage zones
- •Prepare precinct guidelines
- •Organise heritage walks
- •Promote heritage hotels
- •Encourage heritage tourism
- •Legislate: built heritage is part of our culture and should be integrated into planned development. Therefore, publish appropriate Development Control Rules for heritage zones and precinct.

Bio-diversity

- •Revive Nagpur's bio-diversity, eco-systems and facilitate systems which can be cohabited by people, flora and fauna. To achieve this, bio-diversity corridors passing through the city must be preserved.
- •Create an urban forest by growing appropriate trees in parks and streets.
- •Relationship with the surrounding hinterlands must be one of give and take. A relationship in which the city lives off the hinterland will doom both the city and the hinterland.
- •Promote organic / nature farming to enhance soil life / yield.
- •Nagpur's river (Nag River) originates within the city. This is a unique phenomenon. The fact that the river has its origins within city limits means it should be possible to revive and nurture it.

Presentation on slums and Urban Poor

Group IV

VISION

A CITY WITHOUT SLUMS IN THE NEXT DECADE

Facts and Issues Relevant to The Sector

- Total No Of Slums In the city: 424 (Total population 8,03871)
- Notified slums:289 (population 6,48447)
- Not notified: 135 (population 1,55424)

Land Ownership Pattern In the Slums

•	Government Land	85
•	NMC	08
•	NIT	52
•	Private	81
•	Mixed use land	174
•	Other land	24
•	Total	424

Issues Relevant to the sector

- Provision of Basic Amenities
- Economic Development
- Social Development
- Legal Rights
- Rehabilitation

Vision that addresses Aspects

- Economic Development: Create livelihood opportunities within the slum (preferably cottage industry through identification of the local trends)
- Create Awareness
- Sustainability: Organize the community through training and capacity building, Govt schemes should be converged and integrate them for slum development, Unorganized service sector

Actions

• Agreed areas

Basic Amenities

Tenure rights

Peoples participation

Law and order situation required in slums

Health sector should be addressed

Education opportunity in public schools and institutions for urban poor

Disagreements

- ULC act implementation?
- Transit camp arrangement for migratories
- Political interference
- Policy Intervention in rehabilitation schemes
- Process of giving tenure rights

Broad Action Areas

- Differentiate between an Urban poor and slum dwellers
- Conduct fresh surveys
- Create awareness about the Govt schemes for the urban poor and slum dwellers
- Peoples Participation
- Network with NGO's

Issues to be addressed

- Assessment of existing ground situation. Why is Nagpur not a tourist destination?
- Lack of facilities and infrastructure for visitors
- Lack of conservation of heritage structures/sites
- Lack of information and awareness

Assets

- Gateway to tourism in central India as it is well connected and tourist spots close to city
- Wealth of historical heritage in Nagpur as it is over 300 years old
- Natural resources in terms of lakes and forests considerable
- Open for tourism all year round
- Quality of life is better than most cities

Scope of Development

- Nagpur as an entry point Develop facilities for transit visitors to tourist sites around Nagpur
- Nagpur as a destination Development of Heritage sites in Nagpur. 138 heritage sites already listed but unknown to public.
- Develop sites in metro region

Infrastructure required

- Accommodation for local and transit tourists for all income levels
- Tourist information centre in Nagpur and at other places to attract people
- Development of cultural and convention centres, galleries and museum
- Local transport services and terminus for tourist buses

Facilitation for tourism

- Information, booking and connectivity from all entry points such as airports, railway stations and bus terminus.
- Centralized booking for single window facility
- Promotion of package deals and conducted tours in and around Nagpur. Trained guides Govt. approved.
- Tourist permits for transport to be rationalized and simplified. Spot permit.

- Private participation to be encouraged and opportunities need to be created for them
- Nagpur as a tourist centre to be promoted in electronic media and through participation in fairs and expositions outside Nagpur

Existing Reports

- Tata Consultancy report for tourism in Nagpur and Vidarbha
- Conservation Plan for Heritage structures, sites in Nagpur by Vidarbha Heritage Society in co-ordination with Dept. of State Archaeology, Govt. of Maharashtra as part of Tercentenary Celebration Committee.

Heritage of Nagpur

- Nagpur's identity has to be maintained
- Nagpur heritage precincts and sites to be identified and integrated in the Development Plan of Nagpur.
- All development should be environmentally sustainable
- Specific sites to be identified and developed

Create Pride and Awareness

- Nagpur identity to be preserved.
- Include Nagpur heritage in school curriculum
- Quizzes, contests, fairs for local population
- Presence on the Web A detailed tourist portal
- Exhibition to be organized to create awareness amongst citizens

Others

- Health tourism
- Adventure tourism-trekking, water sports

Traffic and transportation group

Glaring facts...

- Population increasing at a rate much higher than national average
- Growth of vehicles compounding at 10%
 - 1.6 lakhs vehicles being registered every year,
 87 times vehicle increase in the last 40 years
 - Number of vehicles even higher than Mumbai which is 5 times bigger
- Pollution levels alarmingly high

Key issues...

- Massive vehicular congestion on roads
 - High private vehicle ownership
- Public transport grossly inadequate, as per prescribed norms
 - Mainly in terms of volumes vis-à-vis growing requirement
 - Deteriorated in the last 10 years in terms of per person availability
- Chaotic parking situation
 - Heavy on road parking- hindrance to traffic flow
 - In private spaces/ residential areas/commercial, parking areas not available as per plan

Key issues...

- Safety
 - For pedestrians, Cyclists, Senior citizens and School children
- · Health hazard
 - Increasing trends of diseases related to vehicular pollution

TRAFFIC SITUATION UNSUSTAINABLE AND UNACCEPTABLE

Our vision for the sector

We envisage a city which has maximum people mobility, is safe, affordable, eco-friendly and efficient

- People centric all strata of the society, not vehicle centric
- Affordable to both the public and the civic bodies
- Less polluting, no damage to the natural environment
- Efficient energy efficient, time efficient

Proposed strategy

- **Public transport** should become the lynch pin of transportation in Pune
 - Share of public transport must increase from current 20% to more than 50% in the next 10 years (in terms of number of trips)
 - Dedicated lanes for buses, cycles
 - Explore private participation options
 - Prioritize allocation of available resources
 - Co-ordinated parking areas park and ride
 - Disincetivize private vehicle usage

Proposed strategy

- **Safety** (target 10% reduction in accidents every year)
 - Dedicated bus lanes
 - Segregation of modes focus on cycle tracks and footpaths

Proposed strategy

Parking policy

• Dedicated multi-modal terminals in peripheral areas

Divided views on public parking

Parking as a device for traffic demand management - disincentivize parking through high parking charges

O₁

Parking to be provide for all vehicles - Multi-storied parking

Private parking should be as per norms, decided through consultative process

Proposed strategy

Other suggestions

- All congested parts of the city to be identified and planned for
- Vehicle free zone management to be adopted for select areas
- Usage of technology for better traffic management e.g. computerized signaling
- Time restriction of heavy vehicles in the city
- Compulsory provision of footpaths on all roads
- Flyovers: area if disagreement
 - Flyovers needed to reduce congestion,
 - Flyovers is no a solution to reduce congestion
- Financial strengthening through fines/challans/pollution tax to be used for public transport

Proposed strategy

• Suggestion from traffic police

- Police force to be strengthened in terms of numbers, capabilities/skills, equipments
- Registration of cars to be stopped
- Police to be a part of decision making process related to traffic planning (e.g. permission for malls)
- Comprehensive traffic surveys needed
- VIP visits and city festivals should not disturb city traffic

Action area

- •A comprehensive traffic and transportation plan must be developed immediately considering all the broad areas discussed in this presentation
 - •In line with the proposed vision
 - •No ad-hoc solutions/plans
 - •Must incorporate an investment plan
- •This plan must be a part of the overall development plan
- •Single and independent authority for all traffic and traffic and transportation issues
- The suggestion of our group may be refined after discussions with various other groups

Thank You

We are open to your comments and suggestions

Water supply, Sanitation, Sewerage & Solid Waste Management Group No. 1

Water supply Water supply

Vision:- 24 x 7
Regular Water Supply
Reasonable & Rational tariff

Upto 2011

Pench I, II, III, IV & Kanhan are sufficient

After 2011 Rahari Project Kochi Project

Involving distribution system

Sewerage

- Toilets for all, No open
- Sewerage for whole city
- Recycle waste water for non-potable use
- Toilet Pay & Use

Solid Waste management

- Source Segregation to be done dry & wet
- Daily regular collection of waste
- Scientifically disposal in every Ward zone
- Public awareness
- Energy from waste
- Hazardous Waste outside city

Storm Water Drainage

- Storm water should recharge ground
- Rejuvenation of Nag & Pilli River & other
 Nallah should be done to prevent flooding
- Natural Water Bodies to be protected



IV. PRESENTATION D

Concluding presentations made during the visioning workshop (5th Feb 2006)





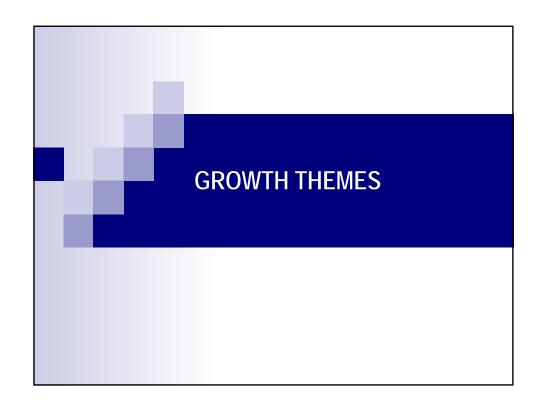




The Growth Nucleus of Central India

.. an eco city that provides adequate, equitable, sustainable access of urban services for all citizens

.. a city that is safe, livable and promotes growth of its citizens





DIRECTION FOR GROWTH



- Visioning exercise has indicated that NMC should support the following growth themes:
 - □ The City Attaining a key position in IT, ITES and health services
 - Support industrialization in its hinterland
 - Promoting education, culture and tourism

5



Infrastructure Development Strategy



- Investment Plan
 - □ 100% coverage in water supply and improved service levels
 - □ 100% coverage in sewerage collection
 - Safety and better management of traffic through provision of flyovers, bridges, parking facilities etc.
 - 100% solid waste collection efficiency and disposal of waste in environmentally friendly manner



Water Supply and Distribution



- Vision Water For All and 24 x 7 Supply
 - ☐ Water Audit and Energy Programme
 - ☐ Strengthening of water supply system
 - □ Reducing raw water transportation losses Pench IV
 - □ Augmentation of source
 - Water reuse

-



Sewerage



- Vision: 100% Coverage in sewerage collection and treatment
 - □Strengthening sewerage network
 - □ Setting up Sewerage Treatment Plants
 - □ Changing old and defective sewer lines



Storm Water Drainage



- Vision: Strengthening and rejuvenation of natural drainage system
 - □ Rejuvenation of Nag and Pilli rivers
 - □Nallah Canalization and strengthening
 - □Lake rejuvenation
 - □ Drainage along the roads

c



SOLID WASTE MANAGEMENT



- Vision: Clean City, Bin-free City
 - □ Development of land fill site
 - □ 100% House to House Collection
 - □ Segregation at source, composting and waste to energy





TRANSPORT

- Vision: Safe and Efficient Traffic Management
 - □ Road Network improvement with widening, ROBs, flyovers planned to remove traffic congestion
 - □ Development of outer ring road
 - ☐ Techno-feasibility of MRTS already in place
 - ☐ Installing traffic signage's, signals, markings, GPRS systems and intelligent traffic management systems

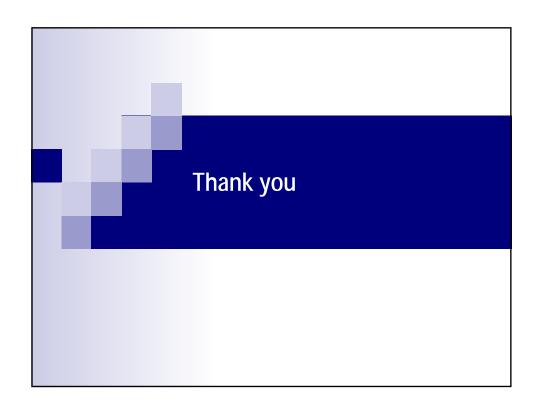
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Housing and Slum Upgradation



- Vision: Slum Free City
 - ☐ Access to basic services to slum dwellers
 - ☐ Slum rehabilitation programme
 - □ EWS / LIG Housing
 - □ Public toilets, night shelters, destitute children's homes, beggar's home, working women's hostel and marriage halls



City Development Plan- Nagpur

ANNEXURE G: FOCUS GROUP DISCUSSIONS: DISCUSSION **SUMMARIES**

Date: 25th February 2006

Time: 4-6 p.m.

Venue: Nagpur Municipal Corporation

Group name: Medical and Educational Infrastructure

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group -Medical and Educational Infrastructure. The discussions in the group revolved around the topic of primary education and health care.

The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentations made by NMC officials and stakeholders in the vision and mission workshops.

Summary of the discussion

First and foremost requirement is to improve the quality of NMC schools. To develop the buildings housing these schools, NMC should allow more FSI. It should allow private sector participation for infrastructure development and maintenance in these schools. In lieu of that, after schools hours, the private partner, may be allowed to use the spaces for library, coaching classes etc. Computerized library should be added to the schools. Public private partnership in school education would go a long way in improving the quality of NMC schools.

Military school for girls would add to city's glory. A cyber crime training centre may also be developed. A centralised library should be built by NMC, well equipped with foreign books, information about foreign universities etc. Awareness of students should be increased about smoking, drugs etc.

To attract more and more students to the city, higher education should be made cheaper. Better infrastructure in government universities and colleges would also be needed. NMC/ Nagpur University should frame plans to utilize their educational infrastructure and premises after regular working hours.

To retain students after college years in the city, scholarship should be presented to students and opportunities for industry interface should be increased. Basic amenities should be improved in the University area.

The sector mission statement should be "Education for all"

We need to improve our education systems and link it up with employment opportunities to prevent the on-going brain drain. We should encourage a healthy competition between pubic and private universities in the city.

Nagpur is a hub of numerous national level institutes. It also has ample educational infrastructure. It may become another Manipal of India soon.

NMC officials suggested that *Zilla parishad* schools should be moved outside NMC limits and clarity should be there with regard to their maintenance and administration responsibilities.

Specialty technical institutions should also be developed, keeping in mind the job market. For e.g., IT, aeronautical engineering etc. Specialized institutions for street children rehabilitation should be developed by NMC. They should be given vocational training.

Planning should be done in a way to support employment to the all the educated citizens. Accordingly, there is need for more industries and training institutes. Research laboratories in fields like pharmaceutical and agriculture should be set up. Government may seek NRI participation for the same.

We should also motivate Nagpur's children for joining the defence sector. We should restrict new colleges from setting up. Currently, the number of institutes is increasing but not their quality.

To support the medical industry boom in Nagpur, nursing courses may be started.

City Development Plan- Nagpur

Nagpur Municipal Corporation

Date: 27th February 2006

Time: 4-6 p.m.

Venue: Nagpur Municipal Corporation

Group name: Land Use and Housing

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group – Land use and Housing. The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentations made by NMC officials and stakeholders in the vision and mission workshops.

Summary of the discussion

Loading the entire cost of housing on the poor is not possible. Large sums of money have been provided to NIT for unauthorized layout for improvement, but the situation of lack of infrastructure still exists. While planning housing or rehabilitation schemes, authorities need to include not just core facilities like water, sanitation etc, but social amenities as well.

Spaces for housing are available at Amravati road and Kanhan, but urban transport a big issue. For success of a housing scheme for the poor, connectivity with work areas is critical. A detailed survey is needed to identify appropriate plots for developing housing schemes. Subsidized industrial housing schemes may be considered in future development plans. For housing schemes for the poor, status should move from rental to ownership now. This would ensure better maintenance of the buildings.

In general, housing stock is more than adequate in the city. The permitted FSI has not been consumed yet, even in the central areas of the city.

Periodical review of bye laws is needed to keep up the market demands of changing lifestyle. Even in the heart of the city and old areas, planning standards to be revised to addressing conservation issues.

NMC and NIT should have a common face for the public for co-ordination for development plan and implementation issues. Merging NMC and NIT may be done, at least for planning purposes.

The slums and unauthorized layouts are very high in number in Nagpur. But, NMC feels that all 284 pockets would be tackled under SRA. Extra FSI and separate by elaws would be prepared to ensure commercial viability of such projects.

In the new plans, hierarchy of roads should be based on development realities esp the expected densities. Supporting such development with upgraded infrastructure would not be a problem in that case.

One of the participants raised a question about inability of NIT in implementing the DP (Development Plan). There is no clear idea about the extent of DP's implementation. NIT representative said that the key reasons are long approval time, announcement of Gunthewari Act (wherein, all encroachments have been regularized) and the artificial demand of land created on the outskirts of the city. To address these issues in future, NIT has already started preparing plans for six schemes in the city outskirts.

There is an urgent need to repeat Urban Land Ceiling Act to encourage group housing / townships schemes in new areas.

City Development Plan- Nagpur

Nagpur Municipal Corporation

Date: 28th February 2006

Time: 4-6 p.m.

Venue: Nagpur Municipal Corporation

Group name: Water supply, sanitation, sewerage and solid waste management

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group – Water supply, sanitation, sewerage and solid waste management.

The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentations made by NMC officials and stakeholders in the vision and mission workshops.

Individual Suggestions/Action points

NMC: One of the main problems that the city faces is the loss of water of about 40%. In developed countries, this loss is about 15%. NMC will find it difficult to reach the developed countries' standards but it is possible to reduce losses to 25%. Accordingly, NMC has plans to take up water and energy audit projects worth Rs50 crores under JNNURM. The other problem that faces NMC is the inequitable distribution of water. Just as NMC is trying to provide better water supply services to the city, the citizens also have a role to play in conserving water and reducing wastages. Also, people also have to cultivate the habit of paying their bills and in time. It costs NMC Rs10 per litre while the consumers on an average pay Rs3.50 per litre. The aim of NMC is to provide potable water that meets the requirement of in terms of quality and quantity of water.

Stakeholder: It is important that for sustainability that water sources within the city are exploited. By rejuvenating the lakes, the city can use sources within the city.

NMC: Rejuvenation of lakes can provide at the most 10 MLD of water and this quantity is insufficient to meet the demands of the city, which is in excess of 500 MLD.

Stakeholder: What about the sustainability of the water sources? Till what time are we going move from one source to another to meet our city's requirements? We should supply non-potable water for industrial uses.

NMC: In Nagpur there is proper demand side management. In the four summer months demand shoots for non-drinking months. Also water supplied to the western parts of the city is more than that what is supplied to other parts.

Stakeholder: In the slum areas, the there are supply problems in the summer months. The ground water potential can be exploited during the summer months when there is a supply issue in the summer months. The wells in the slum areas can be used for meeting their drinking water requirements. But the problem is if municipal water is available, the maintenance of these wells is completely ignored. So when the need to use well water arises, it is found that water is not suitable for potable purposes.

Stakeholder: Once the slum dwellers are used to getting water from municipal connections, how do you expect them to maintain the wells. The situation in summer months gets so bad that in slums there is water supply for two hours once in three or four days?

NMC: In the 5072 and 1900 layouts under NIT, the use of tube wells is rampant. NIT develops areas without taking the consent of NMC and then asks NMC to provide infrastructure to these layouts. This puts tremendous strain on NMC.

Stakeholder: Water is available in northern and western parts; development is along southern end. Besides there is horizontal expansion happening in the city. NMC should develop the infrastructure as per the development patterns in the city.

Stakeholder: There is no common forum for NIT and NMC to discuss issues. NIT develops and NMC has to supply water; infrastructure plans to be made first, then develop area. We can learn from the example of NOIDA. In NOIDA, infrastructure is planned first then the development takes place.

Stakeholder: In Chennai water harvesting and water rejuvenation has solved the water problem. In Nagpur also we can make a similar effort.

NMC: In Nagpur the water table is considerably high and the further ground water charging will raise water table levels and may even threaten the foundations on buildings in the city.

Stakeholder: NMC's response to cleaning of wells is not good at all. Out of ten complaints, one is attended to. People in slums do not get water at all for three days.

Stakeholder: There should be water holidays so that people will understand the importance of water conservation.

NMC: Currently NMC supplies 170 MLD of water to the slum areas. Most of the water is loss due to leakages and theft. Given the lifestyle of slum dwellers and the area of their dwelling space, it is not possible to consumer more than 70 LPCD. With an eight-lakh slum population, the supply should be

less than 60 MLD. The balance 100-110 MLD can be effectively utilized for other parts of the city. This is something that NMC has been planning to do.

City Development Plan- Nagpur

Nagpur Municipal Corporation

Date: 1st March 2006

Time: 4-6 p.m.

Venue: Nagpur Municipal Corporation

Group name: Urban Poor and Slum Development

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group - Urban Poor and Slum Development.

The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentations made by NMC officials and stakeholders in the vision and mission workshops.

Summary of the discussion

There were some points of disagreement among the stakeholders, as highlighted from the previous discussions and workshops like repealing Urban Land Ceiling Act, construction of transit camps, extent of political interference in slum development activities, rehabilitation policy and the issuance of tenure rights to slum dwellers. All the above points disagreement were focused upon during the discussion.

The NMC officials presented the latest developments on Slum Rehabilitation Authority (SRA) scheme. It was informed that the previous slum development schemes have been closed and SRA will be implemented soon. As per the scheme, every household will be ensured a minimum space of 300 sq. ft. This can extend to 450 sq. ft, in which case, the beneficiary will have to contribute for the additional space. It was suggested by some of the stakeholders that a lot of slum areas in Nagpur have already benefited from previous schemes and have the basic infrastructure; hence it is crucial to prioritize the slums for SRA scheme implementation. NMC officials added that there are commercial implications to be considered while deciding a potential site for implementing SRA, which also need to be considered by and these factors will be given due consideration by NMC.

Individual Suggestions/Action points

Participant 1: Slum development should be taken up on a priority basis in Nagpur. SRA schemes should be implemented in a more transparent manner and should involve active participation of NGOs and common people.

Participant 2: There has been an increase in the informal employment opportunities throughout the city, hence this proliferation in the number of slums. The slum dwellers have drawn out plans for redevelopment, but they are not acceptable to the government. It is extremely necessary to integrate people's plans with the development process otherwise the efforts may go futile. Resettlement sites also need to be planned with utmost care and efficiency. In most of the cases, there is no thought on the adequacy of infrastructure availability before proposing a resettlement site. The experiences related to quality of construction of government houses were also discussed. At most of the places, the quality is poor resulting in distrust among the slum dwellers. This also applies to the services provided by NMC in local *Aanganwadis* or *Balwadis*. There is a constant complaint of teachers not being available and over quality of food served. Coupled with this, issues related to minimum wages, alternative livelihood sources for informal sector in Nagpur city were also discussed.

Participant 3: The condition of women and children on the construction sites needs attention. There are no infrastructure facilities to take care of this informal work force that supplies cheap labour to the city. Availability of resting sheds, water, toilet facilities etc on these sites seem to be totally absent. There is also an urgent need to identify and demarcate hawking and non-hawking zones in the city. Considering the growing hawking population and the people who use their services, it is essential to identify and demarcate hawking zones. The areas for these zones and parking stands for rickshaw pullers should be accurately worked out. Absence of this has already created more traffic congestion and overcrowding in the city. Currently the NMC has contracted rag picking and door-to-door waste collection to private contractors. This leads to a lot of questions related to their minimum wages, legal identification and social security. Due to occupational hazards involved in the job, NMC should identify and regularize the rag pickers through issuing appropriate ID cards and providing them with basic health facilities.

Participant 4: It is essential to undertake an extensive survey of all the potential sites for SRA schemes. While proposing resettlement, the NMC/State government should ensure minimum infrastructure standards at the alternative site. The new development plan should take into consideration adequate reservations for EWS housing and opportunities for informal workforce of the city. SRA schemes /any other development programs should envision and facilitate participation of NGOs and communities themselves.

Participant 5: SRA schemes should be designed only for dilapidated areas. Most of the slums in Nagpur are well off in terms of infrastructure and quality of housing. This is also because there has been a lot of inflow of funds in the previous slum development schemes. Hence it is critical to prioritize slums appropriately under SRA. For rehabilitation; an authentic survey of years of residence should be done. For slums that have been growing organically, it is essential to consider access to emergency services like ambulance, fire engines etc.

Participant 6: For success of any slum development program, it is important to ensure tenure rights to the slum dwellers on the same site. Planning of new settlements for urban poor should be holistic in approach and proximity to work place, proper quality of housing, minimum infrastructure levels and a good quality of life should be ensured. The slum areas that already have the desired quality of housing should be de-notified as slum settlements and added to normal housing stock category in the city. It is important to accept the fact that slum dwellers also provide services to the city in form of informal work force, domestic help and providers of other services and hence should be seen with respect. Nagpur city also receives high floating population. People usually arrive in the city in search of better jobs/livelihood opportunities. The city plan should envisage this and make provisions for the same. As far as possible the slum neighbourhoods should be planned as self-sufficient. This should include housing, infrastructure for work, education and recreation areas for this section of the population.

Participant 7: Nagpur city should be clean, green and corruption free. Awareness generation is necessary to achieve the above goal and hence the programs should be popularized through local news channels, cable TV etc. Quality of education in municipal schools should be monitored regularly and steps should be taken to ensure higher secondary education (till 12th) for all. The curriculum in municipal schools, along with ways of imparting education to be reformed.

Participant 8: At least 450sq.ft of houses should be provided under the SRA schemes. Wherever people have come up with their alternatives plans, NMC should take consider people's plans and prepare a comprehensive rehabilitation package. While negotiating for a people's plan, it is essential to identify NGOs who can work with PO's (People's Organizations) to collectively play a role in such mega scale developmental projects.

Participant 9: It is important to generate current socio economic data on the slum settlements in city before planning any developmental schemes. This should be followed by proper coordination between various developmental agencies including NMC, NIT, MHADA etc. The slums communities should be involved from planning to implementation of these programs. The NMC staff should be trained on adopting this participatory mechanism. NGOs can be active partners in facilitating this change. Before getting in to any physical development of slum areas, it is essential to advocate for individual tenure rights to the slum dwellers. This should be facilitated by a single agency (NMC) irrespective of the ownership of land on which slum is based. (State govt., central govt., railways etc). Slum development should be through an integrated approach encompassing needs for education, employment and a healthy environment.

Participant 10: It is important to take stock of physical and environmental status of the slums in Nagpur. Most of these areas have been provided necessary infrastructure and should not be treated as slums anymore. It is also important to clarify whether the existing Gaothans will be treated as slums

in the upcoming SRA program. The process of granting tenure rights is an important step in initiating large-scale development initiative in these areas. This will also enable the slum dwellers to avail appropriate credit facilities for housing and other uses. To realize the benefits of large level slum development schemes, it is equally important to create adequate employment opportunities in vicinity of these slum settlements. New industries should recognize the local skill basket and encourage local employment as well.

Participant 11 (NMC): SRA should be implemented in consultation with the slum communities and NGOs. Proper notification should be issued to the public at large and details of schemes should be shared in a transparent fashion.

City Development Plan- Nagpur

Nagpur Municipal Corporation

Date: 1st March 2006

Time: 4-6 p.m.

Venue: Nagpur Municipal Corporation

Group name: Local Economic Development

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group – Local

Economic Development.

The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentation made by the stakeholders in

the vision and mission workshops.

Individual Suggestions/Action points

Stakeholder: In Nagpur, the scope for manufacturing is reducing day-by-day. Labour is a big problem here. It is not only very organized and costly but also very lethargic. It becomes difficult to operate in such a scenario. Petrol costs are the highest in Nagpur and probably the highest in the country.

Stakeholder: The soil of Nagpur is very fertile. If irrigation facilities are provided adequately, the agriculture potential can be exploited considerably. This will increase the purchasing power of the rural population around Nagpur city. This will boost the overall economy in the region. Nagpur can emerge as a food-processing hub.

Stakeholder: The Octroi rates are very high. This works against setting up of industries within Nagpur city. For industries, which can be targeted in Nagpur city, there should be some kind of concessions by way of Octroi rebate. This will boost economic activity in the region.

Stakeholder: Industrial growth will happen only if backward linkages are developed. For instance in Pune, the presence of the automobile manufacturers has resulted in developing an auto ancillary industry in and around Pune. Nagpur also has to do something similar.

Stakeholder: We need the MIHAN project if the Nagpur has to grow faster. We should aim at completing the MIHAN project in the next three years.

Stakeholder: Political interference in labour disputes is another area of concern. This creates several problems for all the industrialists. That is why there is no major industrial activity in the region.

Stakeholder: NMC has to re-organise itself to function like a corporate entity. They should recruit more qualified people. There needs to be a separate cell for economic development. This cell should provide a single interface for all prospective and existing investors to interact with.

Stakeholder: NMC should be seen as a serious development organisation. They should be more proactive. Nagpur though has a better urban infrastructure than most Indian cities but still lags behind most other cities. Nagpur should market itself to prospective investors. NMC should have an advertising campaign to attract prospective investors.

Stakeholder: Nagpur has lots of potential for IT. In 2000, there were no IT companies in the city. Today there are more than 60 companies in the city. Satyam has already plans for Nagpur. Infosys and Wipro are also looking at Nagpur as a prospective investment destination. IT will surely grow in Nagpur.

Stakeholder: NMC will have to incorporate the needs of industries like IT, education and health sector in the land use plan it prepares. NMC owns several vacant lands in prime locations in the city. This land should be exploited in partnerships with the private sector. IT parks and health care facilities should be developed on these lands.

Stakeholder: Nagpur city has considerable potential for vertical expansion in the core city areas. The existing FSI limit according to industry sources is inadequate and unreasonable. Higher FSI will provide larger built-up area for industrial, commercial and residential consumption.

City Development Plan- Nagpur

Nagpur Municipal Corporation

Date: 2nd March 2006

Time: 4-6 p.m.

Venue: Nagpur Municipal Corporation

Group name: Urban Environment

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group - Urban Environment. The discussions in the group revolved around the topic of Urban Environment, specifically gardens, water bodies (lakes, rivers and nallahs) and the pollution levels of air, water and noise.

The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentations made by NMC officials and stakeholders in the vision and mission workshops.

Summary of the discussion

It was suggested by one of the participants that "Urban Environment" is a broad term and includes many other issues like water supply, sanitation, SWM etc and hence the scope of discussion should be broadened. CRISIL representatives clarified, that there is a separate group that is specially focusing on these aspects of urban environment, and are categorized as core municipal services. Hence the focus in the current group would be confined to the following components of urban environment – water bodies (rivers, lakes and nallahs), parks and open spaces, air quality, water quality and noise levels.

Nagpur historically was termed as "Gateway to Central forest" and still holds the importance of being harnesser of rich biodiversity in central India. The city also takes pride in its 10 lakes, which hold extremely high historical significance, but have been managed poorly.

There are many spaces/areas that represent the natural environment (rivers/lakes/water bodies) and are home to rich biodiversity: flora and fauna. In addition to this, some areas also serve as sources of water supply to the city. It is very important to understand these linkages and accordingly plan for these areas. With the increasing number of projects related to Amusement parks on plans of NMC, it was felt that such initiatives should not be encouraged at the cost of losing heritage and biodiversity

rich sites. As far as possible, the heritage of the city and natural environment should be conserved and not comprised at the cost of "Development".

The deterioration of the natural lakes and water supply sources also seems evident. Ambazari Lake, which was once source of water supply to the city, has turned in to a garbage dump. The water is now unfit for drinking, and is now being used by MIDC for industrial usage only.

Overall air quality is good in Nagpur. SPM levels usually are found above permissible levels in residential and commercial areas in the city, due to increasing construction activity in the city. Thermal power plant also generates large amounts of fly ash, which also increases SPM levels.

High levels of nitrates in water also signify sewage contamination. At places, there is also ground water contamination and this is extremely hazardous for areas that intake ground water.

Noise standards are reported to be under permissible levels. There were no specific concerns raised about noise levels in the city.

Suggestions

Incompatible land uses are being allowed in the vicinity of Nagpur city. The captive thermal power plant is one such example, which is highly objectionable due to its proximity to the current habitation in the city.

It is imperative to adopt a holistic approach towards nature conservation in the region. Hence there is need to draw lessons from NBSAP (for Pune) which has specific action plans for conservation. Biodiversity corridors should be created in the forms of continuous stretches. There should be a clear cut strategy to conserve and protect the physical environment in form of rivers and hills in Nagpur.

Nag River has its origin in Nagpur. It is very important to think in terms of rejuvenation of the river and address issues related to its pollution due to sewage and other wastes. A comprehensive plan needs to be drawn out for the same. Efforts/schemes should be designed to check diversion of sewage inflow in to the lakes, by locating the sewage treatment plants appropriately. It was suggested to go for decentralized sewage treatment. Some of participants also suggested sewage/ wastewater treatment at individual household level itself.

The Group also reflected on creation of new lakes/water bodies. All the lakes were long back by the kings. The present planning doesn't seem to recognize the need of creating new water bodies in potential areas of the city.

One of the NMC officials commented that any development plan has to take into consideration the natural environment. Biodiversity conservation programs should be the focus of CDP as well. The

responsibility of implementing these activities has to be taken up jointly by NMC, NIT, NGOs and other public sector departments. Funds should be channelised to ensure development of gardens, open spaces, roadside plantations in the city. A regular tree census should be undertaken to measure the progress of these efforts.

Another stakeholder suggested that it is important for any development plan to identify and demarcate biodiversity corridors in the city. It entails clear demarcation of water bodies (lakes/rivers/wells) and plans to conserve their catchment areas. Reference should be made to the Supreme Court directives, which also encourage people to revive the lost lakes/water bodies. There is also an urgent need to think about decentralized sewage/waste treatment at individual household level. This will help reduce the pressure on central treatment plants and ensure proper disposal of sewage generated. It is also important to review the linkages of the city with its hinterlands to ensure sustainable exchange of food, water and other resources.

Every city plan should be necessarily based on the principles of "Eco Planning". Essential features that constitute the landscape of city (including its topography) should not be ignored in the city planning process. It is also important to ensure that new development follows the principle of ensuring sufficient open spaces in the city in form of open spaces. Certain species of flora and fauna that are native to the region exist in areas in and around Nagpur. Special care should be taken to ensure their conservation in city planning. The fringe areas are degrading fast. We need to ensure that they are planned and maintained well. In this initiative, it is also important to educate the people and make them part of this planning process.

It is important to plan the entire development in the area in coherence with infrastructure investments. Development in NOIDA, Navi Mumbai could be taken as examples in the Indian context. While the investment plan has to ensure ecological sustainability, it is also important to consider the spillover effects of development, which may not be environment friendly.

City Development Plan- Nagpur

Nagpur Municipal Corporation

Date: 4th March 2006

Time: 4-6 p.m.

Venue: Nagpur Municipal Corporation

Group name: Tourism, Culture and Heritage

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group -Tourism, Culture and Heritage. The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentations made by NMC officials and stakeholders in the vision and mission workshops.

Heritage conservation should be a focus area in preparation of building regulation and development plans. Heritage includes both natural and man-made heritage.

Summary of the discussion

Heritage

Lately there have been a large number of unauthorized layouts spurting in the city, near to fringes or in fringe areas. A rough estimate suggested around 2500 such layouts. It is important to devise a plan, which can check the growth of these unauthorized developments in city's precincts.

List of heritage structures, prepared by the Heritage Committee needs to be revised-old industries can also be considered in the new list.

Like heritage structure, precincts also need to be identification by the Heritage Committee and development guidelines need to be defined for them. Initial steps would include detailed mapping of the areas.

Heritage Committee also need to plan separately for the old city area and the same should be incorporated in the Development Plan. Adequate infrastructure, appropriate public transport (no or minimum pollution) should be provided. Overhead wiring to be removed to improve the urban design aspect. Relocation of hazardous industries and re-development of important structures should be carried out from the conservation fund. Within the old city area, vulnerable zone should be marked separately. Strict architectural controls -street furniture, skyline, landscaping, signage and names should be enforced.

Nagpur Municipal Corporation

Overall, regulation should be done for the heritage structures in terms of building and traffic regulations, zoning, monitoring pollution and related activities. Funds and other resources for maintenance should be provided separately.

To monitor all these activities, a separate heritage department/ cell should be created in NMC. NMC should create a separate conservation fund from its budgetary allocations. It may also seek donations or grants from NGOs, industrialists and other organizations active in this area. 204 structures are already listed as heritage structures.

There was a debate about the subject whether all heritage structures should be made open to public. Lots of government buildings, listed as heritage structure are not open to public visits, which limits people's interest in those. Some other participants countered the fact mentioning the security issues and maintenance cost associated with such a step.

Tourism

Nagpur has certain inherent advantages to be developed as a tourism destination – connectivity, location and proximity to tourism sites. For development of this sector, NMC should consider development of world class convention centre. Tourism may be developed on the theme of adventure tourism, religious tourism, health tourism, transit site or eco-tourism. Activities like Nagpur festival should be organized alongwith other promotional activities.

MTDC can convert a few heritage structures into guesthouses for their proper marketing and usage. Some pilot projects for tourist sites development may be taken up by MTDC through private participation. Heritage walks and tours may be organised. RTO should refine the process for such permits Private owners of important heritage structures should be encouraged to maintain and develop them through incentives like waiver of property tax.

Regular cultural and festival activity should be encouraged by providing subsidized sites and other incentives. Awareness campaigns should be carried out by state tourism department and private operators. An official website should be created to market Nagpur. Tourism circuits may be developed including some non-heritage structures also.

To build the sense of city's culture and ownership for the same, local schools should make this subject as a part of their curriculum. Photo exhibitions may be organized depicting the glory of Nagpur's past. Training of guides, light and sound shows etc. are was also suggested by the participants. Finally, an integrated tourism plan should be prepared and it should be further integrated with the development plan

City Development Plan- Nagpur

Nagpur Municipal Corporation

One of the participants suggested that the old secretariat building should be developed as a museum.

Date: 8th March 2006

Time: 5-7 p.m.

Venue: Nagpur Municipal Corporation

Group name: Roads, Traffic and Transportation

Preceding the 2nd stakeholders' workshop, a focus group discussion was held with the group - Roads, Traffic and Transportation. The session started with a presentation about the agenda of the discussion, sector relevant issues emerging from city's rapid assessment and a summary of the presentations made by NMC officials and stakeholders in the vision and mission workshops.

Individual Suggestions/Action points

Citizen: Nagpur has no traffic plan. Without a traffic plan, the city is building flyovers, widening roads etc. Is that the way the road infrastructure in the city is going to be improved?

Citizen: The IRDP project has several flaws in the road design. These need to be corrected. Also, because of IRDP, the average speeds of the vehicles have increased substantially. It is important that speed-calming devices are installed at critical points.

Traffic Police: Technology has to be used to manage traffic in the city more effectively. The use of CCTV and active traffic control can considerably aid the traffic police in managing the traffic more effectively. The use technology particularly closed circuit television and active traffic control are recommended in the city of Nagpur. For a smooth flow of traffic, NMC should synchronise the signals in the city.

MSRTC: MSRTC is finding it difficult to improve the public transportation system in the city. The city bus operations are loss making and hence find it difficult to invest in new capacities. MSRTC had asked NMC to take over the city bus operations but had declined in the past.

Citizen: The public transportation system must be improved so that people do not resort to use of personal vehicles on a daily basis.

Citizen: A major problem that plagues the city has been the absence of parking lots in the city. It is important that pay and park schemes are develop in the city. Building plans make a provision for parking lots but in reality the designated places for parking are being put to commercial activities. NMC should be vigilant in identifying the violators and should take immediate steps to put an end to unauthorized development.

Traffic Police: For Nagpur city to be safe city for both pedestrians and motorists, it is essential that its citizens are aware of the traffic laws. It is recommended that traffic parks are set-up in the city to educate children about traffic discipline and road safety.

Citizen: The city roads have to be safe for non-motorised traffic such as bicycles. The city should have a separate lane for bicycles since Nagpur has a large bicycle population.

Citizen: NMC should take over the public transport functions from MSRTC. NMC being the local body will be more concerned about Nagpur's needs rather a state owned body.

Citizen: Nagpur should have a public transport policy, which will be basically inspired by the National Urban Transport Policy. MSRTC should throw open their infrastructure - bus depots, workshops etc – for other users like private bus operators. Private buses should be allowed to operate along with MSRTC.

Citizen: NMC and not private operators should run public transport operations in the city. Private operators will not care about public safety. Public transport should be provided only by NMC.

NMC: NMC is planning to invite bus operators to provide public transport services on a contract basis. We are awaiting approvals for the authorities to be able to provide such services.

RTO: RTO faces several problems in the city. The local RTO does not enough space to conduct driving tests in the city. There is a need to have more than one RTO in the city. This will reduce the pressure on the existing RTO.

ANNEXURE H: CITIZEN'S DEMAND SURVEY: SEC CLASSIFICATION, QUESTIONNAIRE AND SURVEY FINDINGS

SOCIO-ECONOMIC CLASSES (SEC) GRID

OCCUPATION CWE	of the	Illiterate (1)	School up to 4 th / literate but no formal schooling (2/3)	School $5^{th} - 9^{th}$ (4)	SSC/ HSC (5)	Some College but not Grad. (6)	Grad./ Post- Grad. Gen. (7,9)	Grad./ Post- Grad. Prof.
1. Unskilled V	Vorkers	E2	E2	E1	D	D	D	D
2. Skilled Work	ters	E2	E1	D	С	С	B2	B2
3. Petty Traders	3	E2	D	D	С	С	B2	B2
4. Shop Owners	S	D	D	C	B2	B1	A2	A2
5. Businessm en/	None	D	C	B2	B1	A2	A2	A1
Industrialists with no of	1 – 9	С	В2	B2	B1	A2	A1	A1
employees	10+	B1	B1	A2	A2	A1	A1	A1
6. Self er	nployed	D	D	D	B2	B1	A2	A1
7. Clerical / Sal	esman	D	D	D	С	B2	B1	B1
8. Supervisory l	evel	D	D	С	С	B2	B1	A2
9. Officers/ Exc	ecutives	С	С	С	B2	B1	A2	A2
10. Officers/Exec	cutives	B1	B1	B1	B1	A2	A1	A1

QUESTIONNAIRE - NAGPUR'S CITIZENS' DEMAND SURVEY

For office use	only: Q're S	L. NUMBI	ER (WITHI	N CENT	RE)						0	1			(1-6)
STARTING P	OINT NUM	BER								•					(7-9)
CONTACT N	UMBER (W	ITHIN ST	ARTING P	OINT)											(10-11)
HOUSEHOLI	NUMBER	(WITHIN	STARTING	G POINT	<u>.</u>										(12-13)
Admin Ward No	01	02	03 04	05	06	07	08	09	10					,	
															(14-15)
Name of the R	espondent:														
Address of the	Flat. No.							Bl	dg/B	lock	No.				
selected	Street Nam	e						Aı	rea N	lame					
Household	Landmark							PI	N-C	ODE					(16-21)
City / Town / V	illage														
Phone No. wit	h STD Code														(22-32)
		Yes	No		Nam	e		Sign]	Date		
Scrutinized (S	upervisor)	1	2												(33)
Scrutinized (E	xecutive)	1	2												(34)
Back Checked	(Supervisor) 1	2												(35)
Back Checked	(Executive)	1	2												(36)
Accompanied		1	2												(37)
Special Check		1	2												(38)
Name of Supe	rvisor		1					Suj	o. No.	ļ				<u>l</u>	(39-41)
Name of Inter	viewer							_	. No.						(42-44)
Date of Interv	iew (DD/MM	1/YY)					(45-50)						ı		

1.1.1.1 General Citizen: 1

Slum Dweller : 2 (*59*)

IF THE RESPONDENT IS <u>LIVING IN A SLUM</u>, CIRCLE 2 FOR SLUM DWELLER - CIRCLE 1 FOR GENERAL CITIZEN.

1.1 Talk to any member who is 18 years plus

Introduction: Good Morning/Evening. We are doing a study among citizens like you to understand your experience of services provided by NMC. We, Hansa Research Group, have been entrusted this assignment. We would be grateful if you can spare some time to answer this questionnaire. Thank you in advance for your time and cooperation

1.2 Circle quota in quota grid

-		on cic qu	via m qu	ota griu							
Male	SEC A	SEC B	SEC C	SEC D	SEC E	Female	SEC A	SEC B	SEC C	SEC D	SEC E
18-24	01	02	03	04	05	18-24	26	27	28	29	30
25-34	06	07	08	09	10	25-34	31	32	33	34	35
35-44	11	12	13	14	15	35-44	36	37	38	39	40
45-54	16	17	18	19	20	45-54	41	42	43	44	45
55+	21	22	23	24	25	55+	46	47	48	49	50

(60-61)

1.	What is your	(Respondent's	education:		Circle	Below
----	--------------	---------------	------------	--	--------	-------

2. What is your occupation Ci	ircle below
-------------------------------	-------------

EDUCATION CODE :	CWE	Res	Occupation code	CWE	Resp
Illiterate	01	01	Unskilled worker	01	01
Literate but no formal schooling	02	02	Skilled worker	02	02
School – Up to 4 th standard	03	03	Petty trader	03	03
School 5 th to 9 th standard	04	04	Shop owner	04	04
SSC/HSC (10 th -12 th)	05	05	Businessman / Industrialist with no. of employees		
Some college (incl. dip) but not graduate	06	06	None	05	05
Graduate -General (B.A., B.Sc. B.Com.)	07	07	1-9	11	11
			10+	12	12
Graduate -Professional (B.E., M.B.B.S.,	08	08	Self-employed professional *	06	06
B.Tech)					
Post-Graduate-General	09	09	Clerk/Salesman	07	07
(M.A.,M.Sc.,M.Com, M.Phil, Phd)					
Post-Graduate-Professional(M.E.,	10	10	Supervisory level	08	08
M.Tech, MBA, etc)					
			Officer/Executive-Junior	09	09
			Officer/Executive-Middle/Senior	10	10
			Housewife		11
			Retired		12
			Student		13
	(62-	(64-		(66-	(68-69)
	63)	65)		67)	

SEC Grid:

Education of the CWE

OCCUPATION CWE	of the	Illiterate (1)	School up to 4 th / literate but no formal schooling (2/3)	School 5 th – 9 th (4)	SSC/ HSC (5)	Some College but not Grad. (6)	Grad./ Post- Grad. Gen. (7,9)	Grad./ Post- Grad. Prof. (8,10) (70-71)			
Unebilled Workers		E)	E3	E1	D	D	D.	D			
Skilled Workers		E2	E1	D	C	C	B2	B2			
Petty Traders		E2	D	D	С	С	B2	B2			
Shop Owners		D	D	С	B2	B1	A2	A2			
Businessmen/ Industrialists with	None	D	С	B2	B1	A2	A2	A1			
no of employees	1 – 9	С	B2	B2	B1	A2	A1	A1			
	10+	B1	B1	A2	A2	A1	A1	A1			
Self employed Profes	sional	D	D	D	B2	B1	A2	A1			
Clerical / Salesman		D	D	D	С	B2	B1	B1			
Supervisory level		D	D	С	С	B2	B1	A2			
Officers/ Executives J	Junior	С	С	С	B2	B1	A2	A2			
Officers/Executives Middle/		B1	B1	B1	B1	A2	A1	A1			

(72-73)

What is your age? _____ (74-85)

Gender: Male: 1 Female: 2 (76)

Which of these income groups listed on this card does your total monthly household income fall under? Please include the salaries of all members, pension for retired people, and income from agriculture, rent etc. while calculating household income. SHOW CARD A

Native of Nagpur How long have you been staying in Nagpur city? Since		1	2501-5	000	2	5001- 15000		3	15001- 25000	4	25001- 50000	2	5 50000 +	6
Birth Years Years Years Years (78)		of Na	agpur	been s	stayi			city?		•		1		,
f not born in Nagpur, which State & City/Town/Village do you originally belong to. tate :			1			10	2			3		4		5
tate :			n Nagnii	I		tate & (Tity/T			VOII Of	-	elong ta	(78)	
What is the reason for your shifting to Nagpur (Probe & Record Verbatim) 84-89) 8 Water Supply a Do you have a water connection within your premises (in the house)? Yes 1 No 2 90) b If no, where do you get water from? (91-94) c How far is the point from your place of residence?) (III I	птидри				·			-		ong t		
a Do you have a water connection within your premises (in the house)? Yes 1 No 2 90) Ib If no, where do you get water from? (91-94) Ic How far is the point from your place of residence?	City/To	own/\	Village	:						(81	-83)			
Water Supply a Do you have a water connection within your premises (in the house)? Yes 1 No 2 OO) b If no, where do you get water from? (91-94) c How far is the point from your place of residence?														
c How far is the point from your place of residence?	84-89)												
	3 la Do :	Wa t you h	ave a wa Yes	ater co		No			remises (ir	the ho	ouse)?			
(95-100)	3 a Do ; 90) b If n	Wanyou h	ave a wa Yes ere do y	ater co		No			remises (ir	the ho	ouse)?			
(95-100)	B 1a Do (90) 1b If no	Wa iyou h	ave a wa Yes ere do y	1 ou get	t wat	No er from	?	2		the ho	ouse)?			
	B 1a Do ((90)	Wa iyou h	ave a wa Yes ere do y	1 ou get	t wat	No er from	?	2		the ho	ouse)?			

2

Some time

3

Never

4

Most of the time

(101)

All the time

2a	How many	hours	of su	pply do you get ev	very da	ay			I	Hrs (10	02-103)		
2b	Are you sat	isfied v	with	the duration of su	pply?	SHO	W CA	RD (C				
	Highly dissa	tisfied	1	Dissatisfied		2	Sat	isfie	d	3	Very	satisf	fied 4
	TC 4 4 6 -	1 !		1 2 411-		(10	04)			•	•		•
2c		-		1 or 2 then ask pply do you require	re?				Hrs (1	105-106	5)		
3				equate pressure?			RD D		_1115 (1	100 100	3)		
All th	ne time	1		Most of the time	2	S	ome tii	me	3		Never	4	
(107)					.								
Disag	gree totally	1		sagree	2	Ag			3	Agre	ee totally	7 4	1
NI (C	1	4		mewhat	1 4	<u> </u>	newhat		1				<u></u>
one p	payment for all hus households w much do you	l. Do yes s using u pay to	ou th less o NM	eter system to collink that this system will pay less for water every (109-111)	em is f vater (air a (108)	s perso			_			
6. NN	MC is planning	g to im	prov	e its water supply	servio	ces ir	terms	of f	requen	icy, pre	essure, qu	ıality	etc.
10-20)%	1	20-	50%	2	50-	100%		3	50-1	00%	4	1
Woul	ld you be willing	ng to p	ay m	nore for those serv	ices? I	f yes	, how	mucł	n more	? (11	12)	l	
В	Undergrour	nd wate	er dra	ainage/sewerage									
1	Do you drainage sy		reg	gular undergrour	nd		YE	S	1	NO	2	,	
	Yes: 1 No	: 2		(113)									
1a	If No, How Open drain	-	Sept	pose sewerage? (R tic tank : 2 I (114)			anitati	on(L	CS) : 3	3	Ot	her:	4
1b	If Yes, do problem?	you e	ver	have drainage ch	oking	;	YES		1	NO	2		
					(115)								
1c	If Yes, how	freque	ently	do you have Chol		roble	m (Rea	ad O	ut)				
	Once in 7 d Less often			15 days : 2	16 to 3		ays : 3 16)		30	to (60 day	s:	4
										YES	1 NO	2	
2	Does the str (117)	reet dra	in o	verflows in peak t	ime (n	norni	ng or c	lurin	g rainy	seasor	n)		
2a	If Yes - Do			ears it immediately of the time: 2	? (Rea Some			Jevei	r: 4	(118)			

Does your locality get flooded during rains

YES	1	NO	2

(119)

Which are the areas in Nagpur that get affected due to overflooding during the rainy season? Mention Areas And Roads

(120-122)	(123-125)	(126-128)	(129-131)	(132-134)

C Municipal Solid Waste management

Where do you keep the garbage for collection?

At	the	1	Put in community waste bins provided on	2	Street	3	Other	4
doors	tep		the road		corner			

(135)

1b Does the municipal corporation collect waste/garbage directly from your house?

Yes: 1 No: 2 (136)

If yes, what is the frequency of collection of waste from your house SHOW CARD E

More than once a day	1	Once a day	2
Once in two days	3	Twice a week	4
Once in seven days	5	Others (Pl Specify)	

(137)

Is the waste asked to be separated into dry and wet waste?

Yes: 1 b. No: 2 (138)

Are you satisfied with the door-to-door collection of waste service provided by Municipal Corporation? Show Card ${\bf F}$

4a Why do you say so?

	Satisfaction	Q 4a Why?
Highly dissatisfied	1	
Dissatisfied	2	
It is acceptable	3	
Satisfied	4	
Very satisfied	5	
	(139)	(140-145)

What is the frequency of collection of waste by the municipal corporation from community waste bins

in your area?

More than once a day	1	Once a day	2
Once in two days	3	Twice a week	4
Once in seven days	5	Others (Pl Specify)	

(146)

Are you satisfied with the collection of waste from the community waste bins provided by the municipal corporation? **SHOW CARD F** -

6a Why do you say so?

	Satisfaction	Q 6 a Why?
Highly dissatisfied	1	
Dissatisfied	2	
It is acceptable	3	
Satisfied	4	
Very satisfied	5	

(147) (148-153)

.

Are you satisfied with the road sweeping undertaken by the municipal corporation/ its contractors? **SHOW CARD F**-

7a Why do you say so?

	Satisfaction	Q 7a Why?
Highly dissatisfied	1	
Dissatisfied	2	
It is acceptable	3	
Satisfied	4	
Very satisfied	5	

(154) (155-160)

Are you satisfied with the public toilet facilities provided by NMC? SHOW CARD F -

8a Why do you say so?

	Satisfaction	Q 8a Why?
Highly dissatisfied	1	
Dissatisfied	2	
It is acceptable	3	
Satisfied	4	
Very satisfied	5	
	(161)	(162-167)

Do you think 'pay and use' facilities would be better?

YES	1	NO	2
-----	---	----	---

8b(168) Are you satisfied with the general cleanliness in the city? **SHOW CARD F**

9a Why do you say so?

	Satisfaction	Why?
Highly dissatisfied	1	
Dissatisfied	2	
It is acceptable	3	
Satisfied	4	
Very satisfied	5	
	(168)	(169-174)

1 Rs.10-20 2 Rs. 20-30 3 More than Rs.30 4

D.

Roads, Traffic and transportation facilities How do you commute in the city when you go out?

Bus	1	Cycle	2	Two wheeler	3	Auto	4	Car/4 wheeler	5
•	•	•	-		-	•	•	(176)	•

2. In your opinion what are the major reasons for traffic congestion. I will read out a list. Please first tell me which are the

causes for congestion and then rank each in order of priority. RANK ALL SHOW CARD G

	List	Rank			
Α	Poor Public transport - Lack of sufficient buses/routes,				
	frequency of service				
В	Growing economic activity in the city				
C	Lack of maintenance of roads				
D	Increase in population of the city				
Е	Indiscriminate parking of vehicles				
F	Hawkers occupying roads for trade				
G	Encroachment in footpath resulting in people walking on the				
	roads				
Н	In sufficiency of flyovers				

(177-184)

Do you think that parking charges should be made high so that usage of private vehicles is reduced

Yes	1	No	2	
	·	•		<u>(1</u> 85)

4.Do you think Nagpur roads are safe for you as a

	Yes	No	
Pedestrian	1	2	(186)
Motorist	1	2	(187)

5. What do you think will be the solution for solving the traffic congestion in the city. We have a list here. Please rank in order of priority. **RANK ALL** SHOW CARD H

	List	Rank
A	State transport buses should be available in many more	
	routes	
В	State transport buses should be more frequently	
	available	
C	Roads should be broadened	
D	More flyovers should be constructed	
E	Traffic should be controlled in a better way by the	
	traffic police	
F	Roads should be made free of hawkers and	
	encroachments	
G	Private vehicles like cars and two wheelers should be	
	discouraged by imposing petrol cess and road tax	
Н	We should have more autos	
I	We should have modern systems like skybus and metro	
J	There should be separate lanes for bicycles and buses	
K	Footpaths should be provided in all roads for the	
	comfort of pedestrians	
L	Separate parking space should be provided so that roads	
	are free for traffic	
M	Pay and park concept should be introduced	

(188-213)

CARD 2 ____(1-6)

D1. Job opportunities in Nagpur

Do you feel there are adequate job opportunities in Nagpur?

Not at all	1	Limited	2	Adequate	3	Ample	4
						(7)	

Would you like your younger family members move out of Nagpur?

Yes 1 No 2 Maybe 3 (8)

If Yes then for what? (Multi code possible)

Better jobs	1
Better living conditions	2
Better education	3
Other reasons please	
specify	

(9)

E. Suggestions for making Nagpur as a model city in India

1. What is your dream for Nagpur?

(THIS QUESTION IS OPEN -ENDED. ANSWERS SHOULD BE PROMPTED ONLY IF NECESSARY FROM BELOW LIST)

Clean and green city	01
Safe and peaceful city	02
Modern city with world class infrastructure	03
City known for its culture and heritage	04
Growth engine for central India	05
Other please specify	

(10-21)

(22-27)

2. If Rs 100 crores (just a notional amount) is available with NMC, how much will you want them to allocate to each of the following sector for making Nagpur a model city in India. Distribute Rs 100 crores. Total should add to Rs 100 crores. Show CARD J

	Item	Rs (Total	Should	
		Add up	to 100	
		Crores)		
1	Improving roads			(28-35)
2	Improving public transport			(36-43)
3	Improving facilities at slums and providing pucca houses for slum			
	dwellers			(44-51)
4	Improving quality of basic services provided by NMC regarding			
	water supply, sewerage, waste management etc.			(52-59)
5	Maintaining Nagpur's 'Clean and Green' image- parks and water			
	bodies			(60-67)
6	Protection of heritage, culture and beautification of Nagpur			(68-75)
7	Providing more schools, hospitals and other community facilities			(76-83)
8	Attracting more industries / corporates for creating more jobs			(84-91)
9	Others – Specify			(92-99)

F. Slums

Here is a list of statements about slums. I will read out one by one. Please tell me to what extent you agree or disagree Show CARD $\rm L$

		Strongly	Disagree	Agree	Strongly	
		Disagree			Agree	
1	The programmes to improve facilities	1	2	3	4	(100)
	of slums are in place					
2	The urban poor are provided the	1	2	3	4	(101)
	necessary infrastructure in terms of					
	toilets/bathrooms					

3	There are number of hospital services	1	2	3	4	(102)
	to take care of urban poor which					
	provide free service					
4	There are enough schools to cater to	1	2	3	4	(103)
	children of urban poor					
5	Slums should be shifted to some place	1	2	3	4	(104)
	outside Nagpur					
6	Migrants from outside city especially	1	2	3	4	(105)
	belonging to poorer communities					
	should be given transit					
	accommodation to facilitate quick and					
	easy settlement					
7	The Citizen of Nagpur should	1	2	3	4	(106)
	subsidise the services provided to					
	poor citizens of Nagpur					

1a Here is a list of statements about slums. I will read out one by one. Please tell me your opinion with the help of this card Show CARD M

		Always	Mostly	Sometimes	Never	
1	Toilets and bathrooms are maintained	1	2	3	4	(107)
	so that they are clean and usable					
2	There is adequate water supply in	1	2	3	4	(108)
	public toilets and bathrooms					
	throughout the day					

2. What are three most important services that you need in your locality

a		b	C	c)	
	(109-111)		(112-114))	
	(115-117)				

G. Property Tax Assessment

Please answer Yes or No for Each Question

	YES	NO	DK/CS
Is the process of assessment of property tax transparent and objective?	1	2	3
Have all guidelines/rules for this initiative been clearly communicated /publicized?	1	2	3
Is it easy to seek clarifications/assistance from the NMC?	1	2	3
Is the response to clarifications given within a specified time frame?	1	2	3
Is the response up to expectations?	1	2	3
Has it lead to a simpler/ less cumbersome procedure for calculation of taxes?	1	2	3
Is the current system user friendly?	1	2	3
Do you receive your bills on time?	1	2	3

Is there any ambiguity in your bills?	1	2	3	(126)
Is the payment of taxes hassle free / without harassment?	1	2	3	(127)

H. Grievance redressal system

Are you aware of the location/telephone number where you could register your complaints relating to NMC services:

Yes	1	No	2
		(1)	28)

Have you ever complained for any of the NMC services

	Yes	1	No	2	2
•				(129)

3. If Yes, Has the resolution of complaint happened with in reasonable time frame

Yes	1	No	2
		(130)	

4. What facilities would you like to so that making complaints is easier

4. What facilities would you like to so that making complaints is easier					
More ward offices	1	24 hour telephone numbers like police and	2		
		fire service			
Internet	3	Complaint booths	4		
SMS facility to register	5	Any other (specify)			
complaints					

(131)

News relating to NMC and other issues

1. What is the most often reported information about the NMC? SHOW CARD N (Tick more than 1 if necessary)

a. Political activities related to the NMC	1
b. Issues relating to services and activities of NMC	2
c. Corruption, employee strikes, agitation etc.	3
d. New projects and activities taken up by NMC	4
e. Any other – Specify	
	(100)

(132)

How much information does NMC provide you on a regular basis on the following topics. Read Out

		Adequate	Every now	No	1
		information	and then,	information	
			not		
			regularly		
1	Financial position of NMC	1	2	3	(133)
2	The projects that NMC is planning to take up	1	2	3	(134)
3	The decisions that are made by NMC	1	2	3	(135)

4	Tenders/ contracts awarded by NMC	1	2	3	(136)
5	The quality of services that are provided by NMC	1	2	3	(137)

In what form would you like NMC to share information with you on a regular basis. Please rank in order of your preference RANK ALL SHOW CARD O

Press release to newspapers	Ward level meetings
Through resident welfare	Internet/website
associations	
Regular monthly magazine	Local Cable TV

(138)

It is very often said that NGOs or private sector can provide better services than NMC. In which of the areas who should be providing services to you? SHOW CARD P

	NMC	NMC engaging	By local	Private sector
	directly	contractors	community	
	using its		groups/ resident	
	staff		welfare	
			associations	
Water supply	1	2	3	4
Garbage collection and	1	2	3	4
disposal	1	2	3	4
Road maintenance	1	2	3	4
Public transport	1	2	3	4
Street sweeping	1	2	3	4
Property tax and water tax	1	2	3	4
collection	1	2	3	4
Receiving complaints	1	2	3	4
Public toilets	1	2	3	4
Street lighting	1	2	3	4
Maintenance of parks and	1	2	2	4
gardens	1	2	3	4

5. There are some positive aspects of Nagpur given below. Which of these are important to you as a citizen of Nagpur. I would read out each Aspect. Please tell me with help of this card how important is each aspect SHOW CARD Q

	Not	Somewhat	Very	
	important	important	important	
	to me		to me	
Good educational facilities	1	2	3	(149)
Good job opportunities	1	2	3	(150)
Civic amenities are adequate	1	2	3	(151)
Water supply is adequate	1	2	3	(152)
Has a strong culture and heritage	1	2	3	(153)
Safe city	1	2	3	(154)
Good medical facilities	1	2	3	(155)
Cleanliness and greenery	1	2	3	(156)
Social peace	1	2	3	(157)
Is connected to all parts of the country and Maharashtra	1	2	3	(158)

V. PRESENTATION E

Summary of findings of citizens' survey

Citizen Satisfaction Survey in Nagpur City

March 2006

HANSA Research

Objectives of the study

- Nagpur Municipal Corporation (NMC) is interested in understanding the citizens satisfaction about Nagpur city
- NMC also wants to understand the citizens' perception of what they want to do to improve the facilities in the city
- Also NMC wanted to understand what citizen wanted for Nagpur to achieve the status of a model city
- In order to understand Citizens' perception, a study was undertaken
- This is the report of the findings

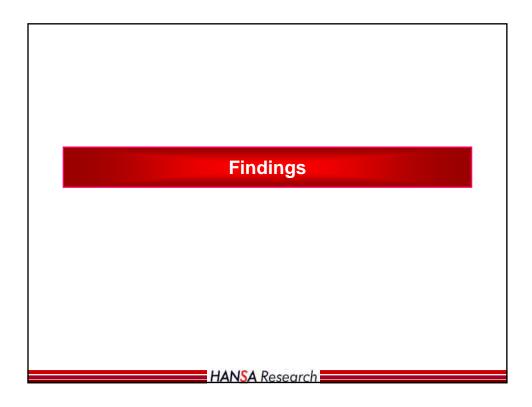
Methodology & Sample size

- The study was quantitative in nature
- Random survey procedures were followed
- The starting point was selected from electoral rolls. The number of starting points by wards were based on population of the ward. That is higher the population in a ward, a greater the starting point in that ward.
- Once the starting voter nos. are selected through random process for each ward, the specific voter addresses were collected from electoral voter list records
- After the study is done, the sample respondents were weighted to Nagpur universe of SEC, age and gender distribution.

HANSA Research

Total Sample size by segment

Gender/ Age SEC →	All	А	В	С	D	E
Male						
18-24	159	12	32	46	44	25
25-34	316	20	74	76	88	58
35-44	235	16	54	52	56	57
45-54	140	18	28	30	31	33
55+	185	42	37	42	37	27
Males Total	1035	108	225	246	256	200
Female						
18-24	188	15	26	52	45	50
25-34	333	30	68	93	85	57
35-44	252	38	48	56	53	57
45-54	123	27	20	28	23	25
55+	84	18	13	22	12	19
Females Total	980	128	175	251	218	208
ALL	2015	236	400	497	474	408

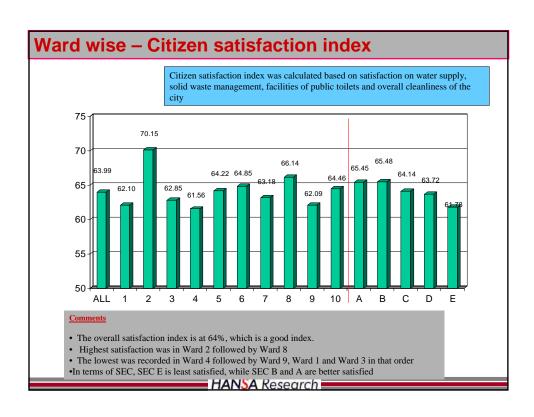


Issues checked

- Citizen Satisfaction Index
- **✗** Water Supply
- Drainage system
- ✗ Solid waste management
- Roads
- **✗** Status of Slums
- ✗ Grievance reddressal
- **✗** NMC − Source of news
- Dreams for Nagpur to become a model city

Natives and Settlers

- 19% have come into Nagpur while 81% are born and brought up here, of the 19%, 11% are in Nagpur for more than 10 years.
- Of the 19% who have come in from outside, 65% are from Maharashtra towns and villages, 16% are from MP, 5% from UP, 3% are from AP, and 1% each from Chhatisgarh, Rajasthan, Kerala, Gujarat and Bihar
- 65% have come in search of job or on transfers, while 23% have come in due to marrying a person in Nagpur and 8% are here to study



Water Supply

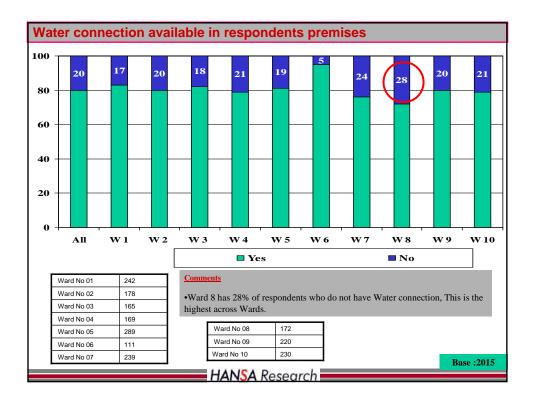
March 2006

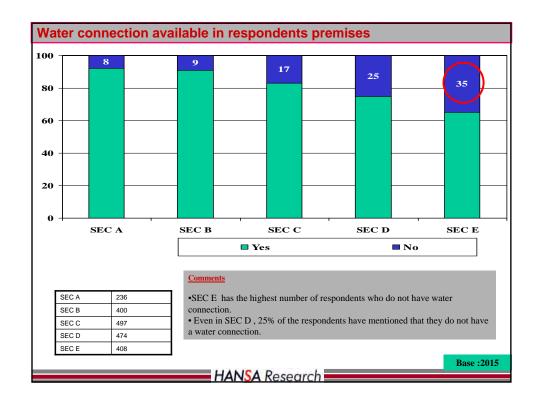
HANSA Research

Water Supply

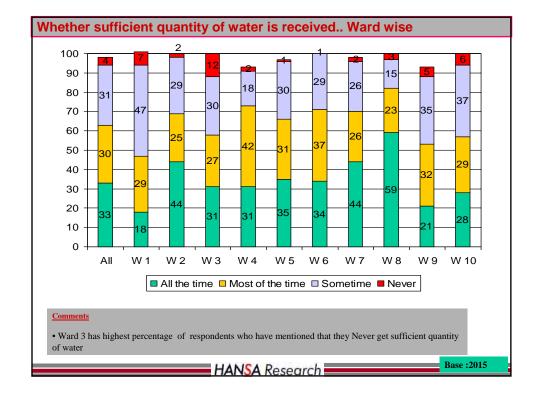
Under Water supply the following issues were covered -

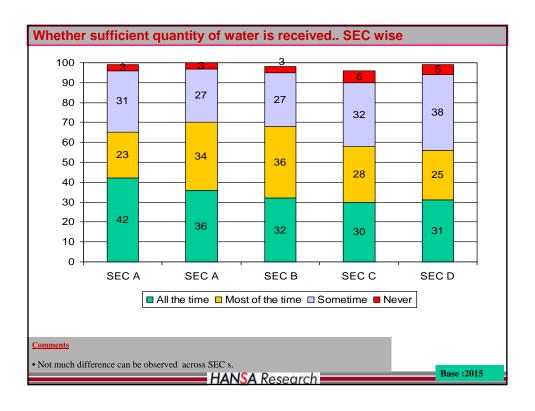
- * Whether Water Connection available in the respondent's premises
- **✗** Sufficiency levels in "Quantity of water" supplied.
- Day-to-day supply of water in hours.
- **X** Satisfaction levels with Supply of water.
- * Required hours of supply.
- Pressure levels of Water supplied.
- M Opinion on the introduction of Meter system to collect water charges.
- * Amount paid to NMC towards Water services.
- Willingness to pay more for better quality of water services.



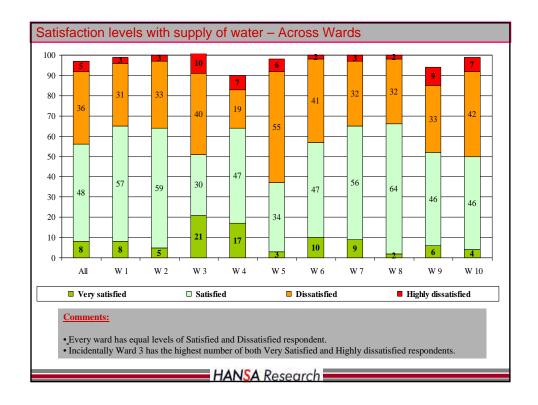


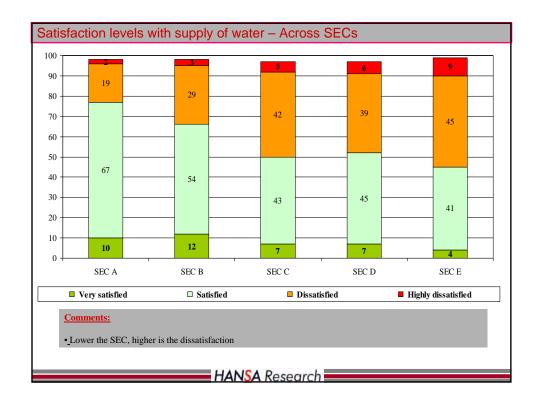
In the Absence of Water connection In the absence of water connection, respondents depend on the following source of water -100 90 80 70-60 60-40 20 30 19 By Government By Well By Hand Pump **By Tanker** Source When asked for the distance between the "source of water" and "Place of residence" - 40 % of the respondents have said 'Near to my place of residence' another 17% have said a 5 minutes time duration. Base :405: Those who do not have water connection HANSA Research



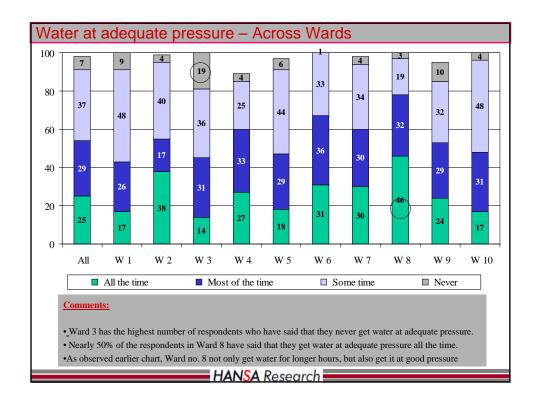


	Sample Size	Average Hours of water supply in a day	
All	2015	4	
Ward No 01	242	4	
Ward No 02	178	3	
Ward No 03	165	3	
Ward No 04	169	7	
Ward No 05	289	3	Comments
Ward No 06	111	4	
Ward No 07	239	6	• On the Whole,
Ward No 08	172	6	Average supply of
Ward No 09	220	4	water across all wards
Ward No 10	230	3	is very low at 4 hours.
SEC A	236	6	
SEC B	400	4	
SEC C	497	4	
SEC D	474	5	
SEC E	408	4	

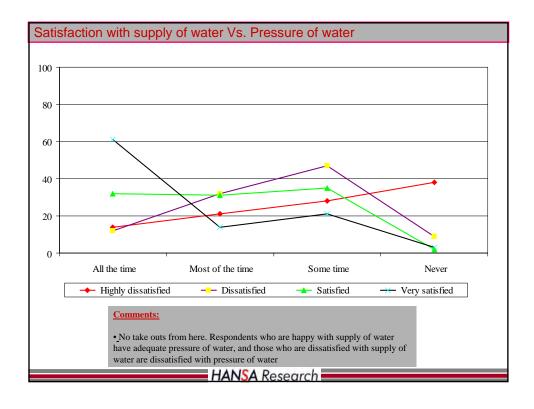


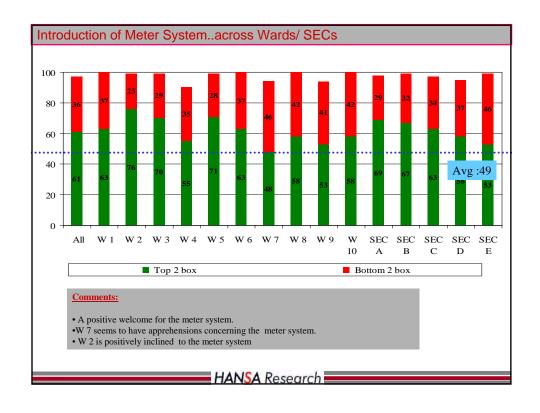


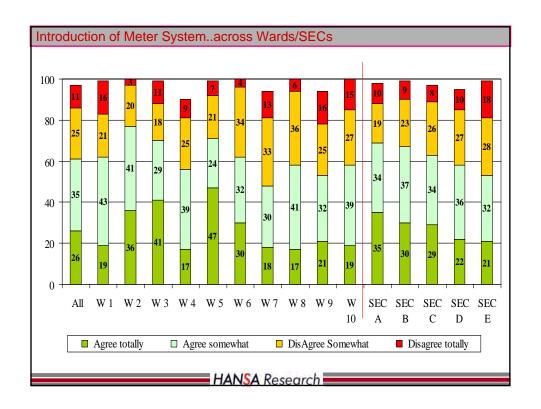
Supply of water	required		
	Sample Size	Average Hours of water supply required in a day	
All	841	6	
Ward No 01	84	5	
Ward No 02	69	6	
Ward No 03	84	8	
Ward No 04	47	7	
Ward No 05	174	5	
Ward No 06	48	4	
Ward No 07	73	5	
Ward No 08	60	8	D 1.
Ward No 09	90	6	Base :respondents who are not satisfied
Ward No 10	112	4	with water supply
SEC A	48	5	
SEC B	133	6	
SEC C	236	5	
SEC D	208	6	
SEC E	216	5	
	HAN	NSA Research	•

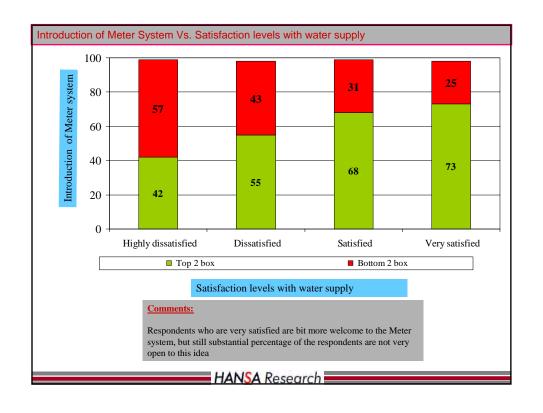


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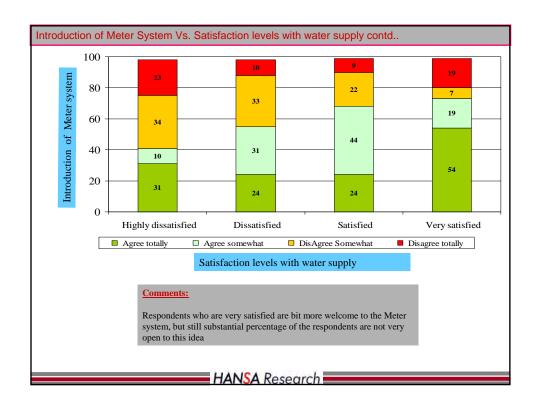






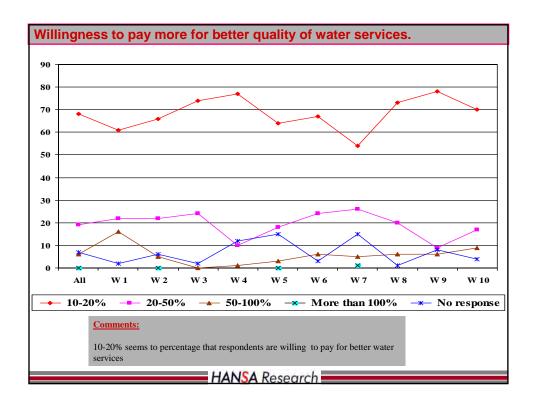


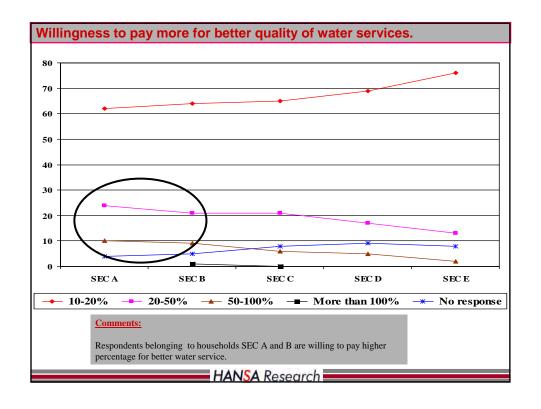
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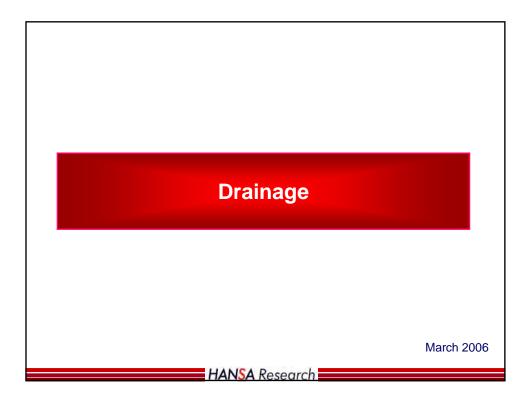


	Sample Size	Mean amount paid	Median amount paid
All	2015	92	Less than 100
Ward No 01	242	87	Less than 100
Ward No 02	178	109	100-200
Ward No 03	165	116	100-200
Ward No 04	169	114	Less than 100
Ward No 05	289	81	Less than 100
Ward No 06	111	92	Less than 100
Ward No 07	239	76	Less than 100
Ward No 08	172	82	Less than 100
Ward No 09	220	85	Less than 100
Ward No 10	230	93	Less than 100
SEC A	236	113	Less than 100
SEC B	400	105	100-200
SEC C	497	92	Less than 100
SEC D	474	89	Less than 100
SEC E	408	69	Less than 100

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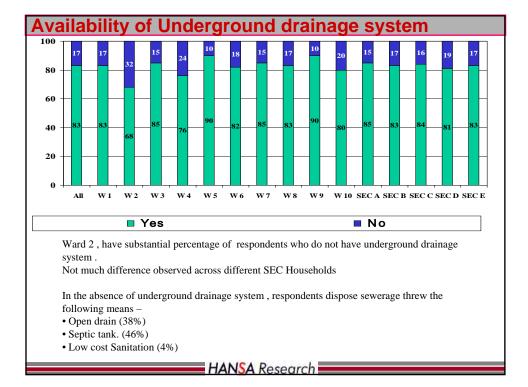


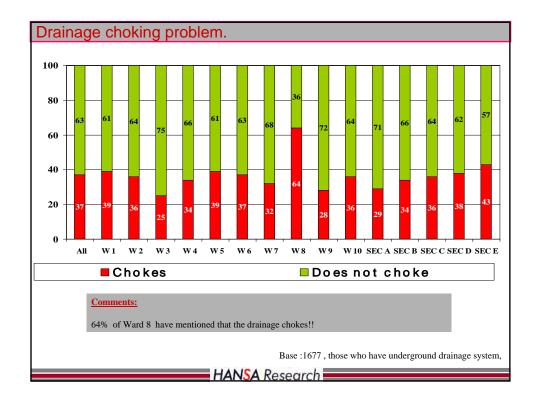


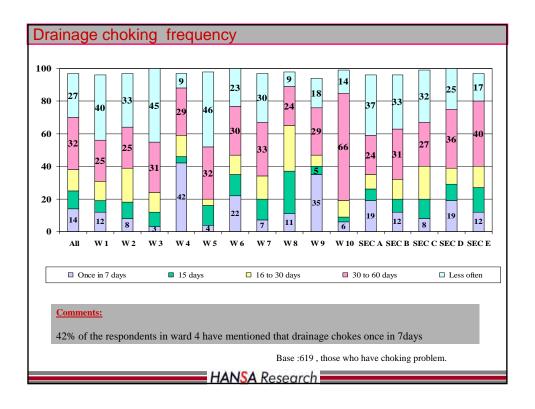
Underground water drainage/sewerage

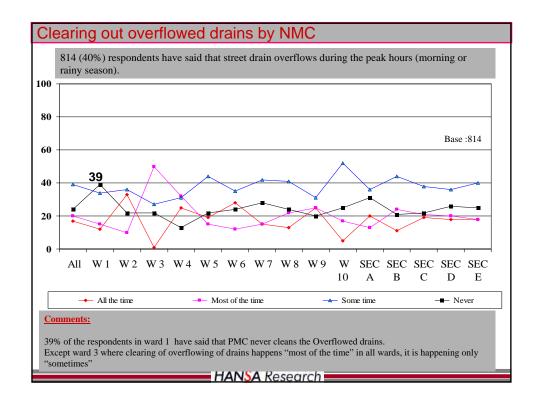
The following issues were covered under Sewerage-

- **✗** Means of disposal of Sewerage. **✗**
- * Choking of sewerage system.
- * Clearing out of overflowed drains by PMC.
- Areas affected during floods..









Areas that get flooded during rains

38% of the respondents have said that their area gets flooded during rains . The areas that get flooded as mentioned by the respondents are -

	%		%		%
Near Nagh River	5	Narendra Nagar	1	Ramdas Peth	1
Jayawantnagar	3	Jaripataka	1	Bajarangnagar	1
Itawaree	3	Manwada	1	Gandhi chowk	1
Balajinagar	2	Shankar Nagar	1	Vaishalinagar	1
Bhurdi	2	Loha Phool	1	Padoke chowk	1
Mahal Rd	2	Indira Nagar Slum	1	Kartan Market	1
Jhansirani Chowk	2	Ravinagar	1	Medical Chowk	1
Sadar	2	Chabhar nala	1	Gandhi Nagar	1
Kawtan market	2	Gopal Nagar	1	Law College	1
Ambasari Talav	2	Chandikanagar	1	Mayanagar Chowk	1
Nandanwan	2	Ghorewada	1	Sita Burdi	1
Piwdi river	1	Kailashnagar	1	Ghaneshawarnagar	1

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Solid waste management

March 2006

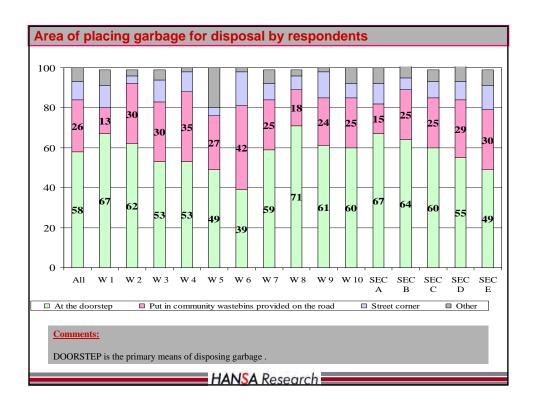
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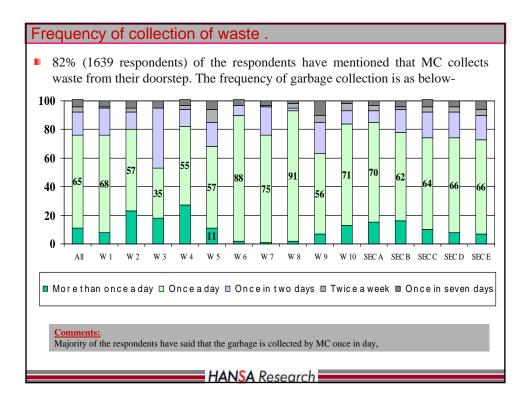
Municipal Solid Waste Management

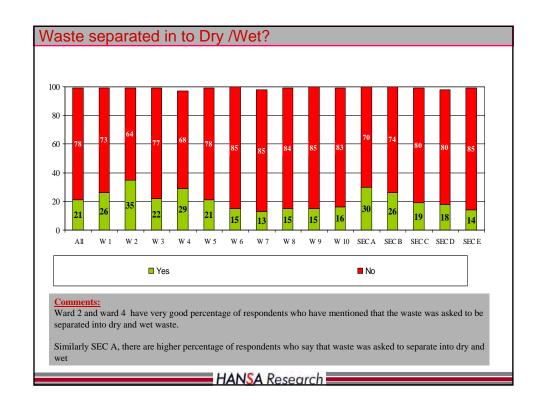
The following issues were covered under Municipal solid waste management-

- **X** Garbage collection.
- ➤ Frequency of garbage collection from home by MC
- **X** Separation of waste into Dry and Wet.
- * Frequency of garbage collection from community waste bins by MC.
- **✗** Satisfaction levels with MC on the below issues −
 - * Frequency of garbage collection.
 - Collection of waste from community bin .
 - * Road sweeping.
 - Public toilet facilities.
 - General cleanliness

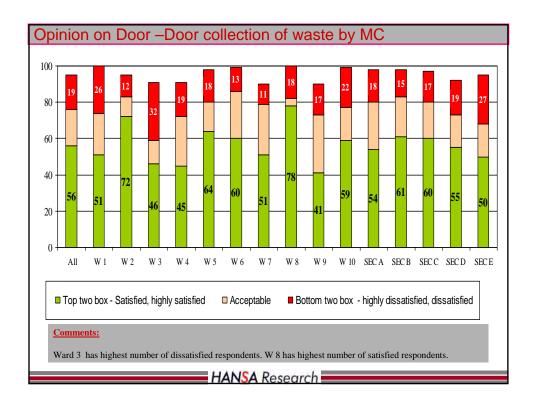
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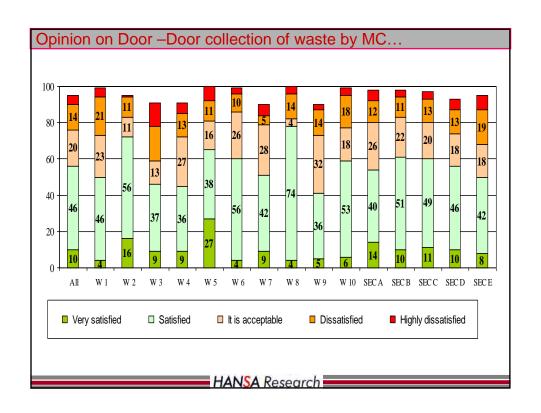


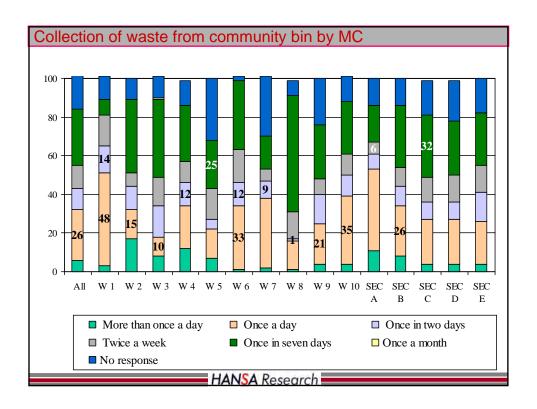


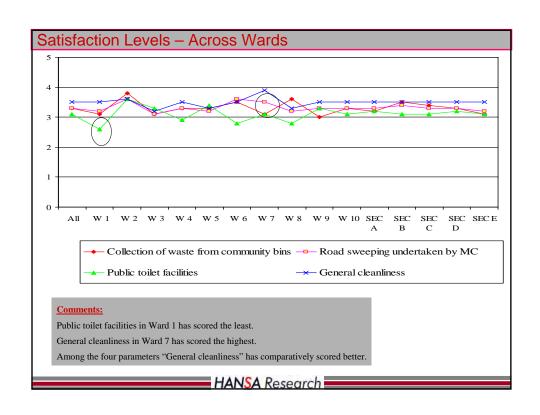


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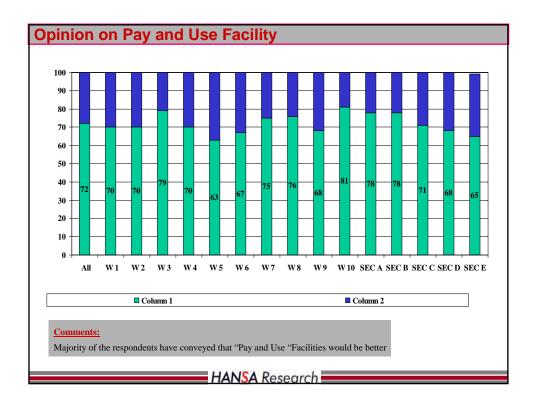


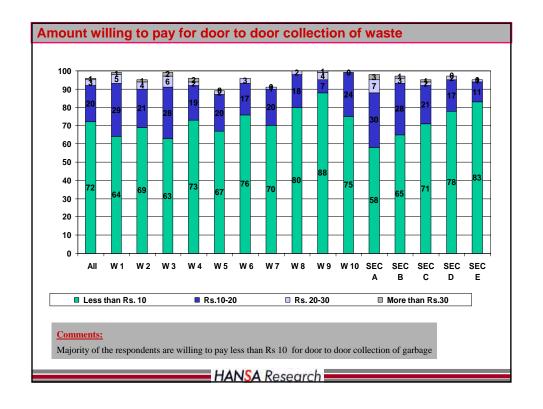




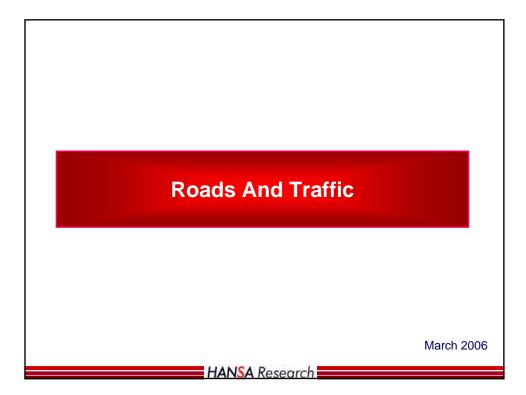


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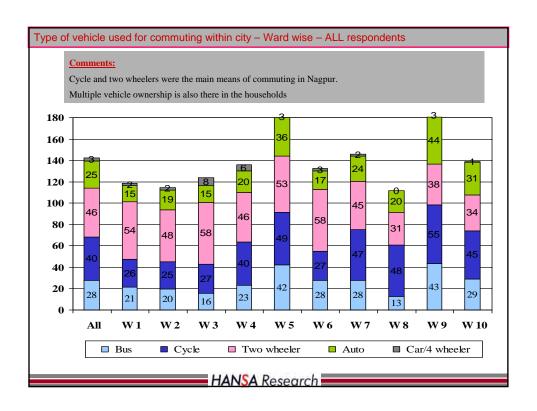
Road, Traffic and other transportation facilities

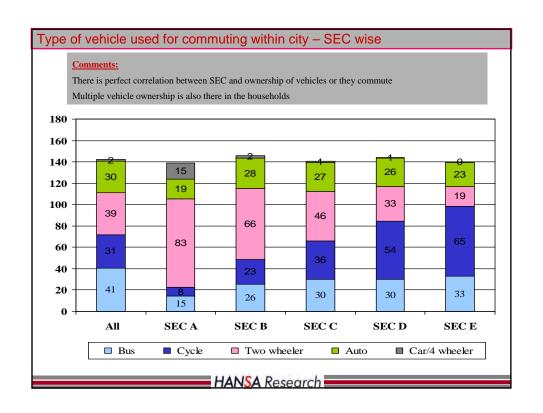
The following issues were covered -

- **✗** Type of vehicle used for commuting within city.
- Major Reasons for Traffic congestion.
- Solution for Traffic congestion.
- Safety of Nagpur roads for traffic
- ★ Hiking Parking charges Will it reduce use of private vehicles.

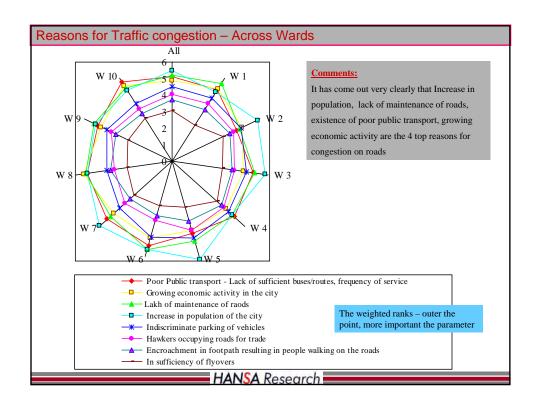
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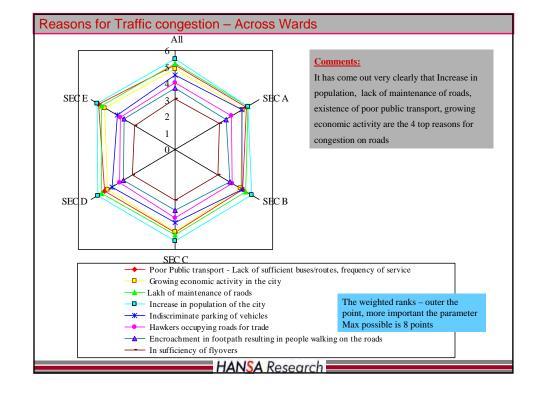
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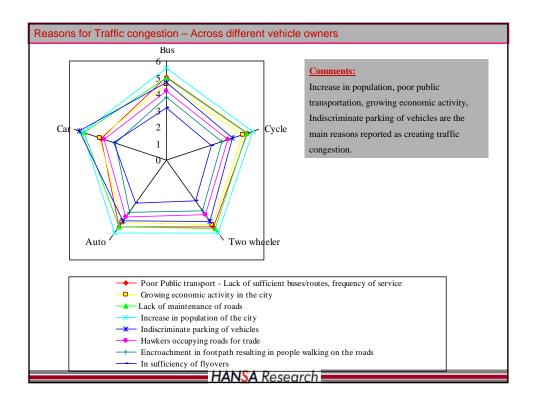


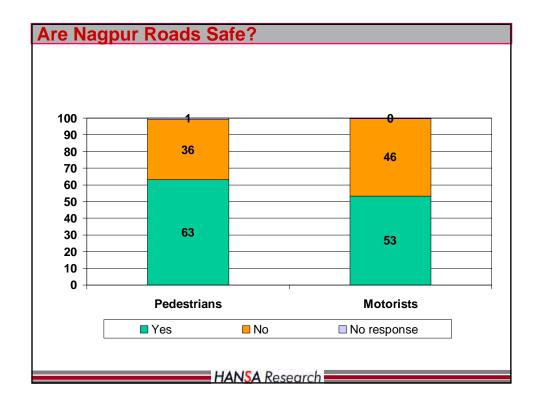
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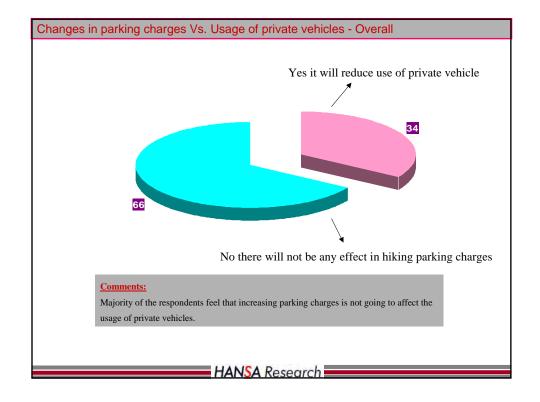
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	All	W1	W2	W3	W4	W5	W 6	W 7	W 8	W 9	W 10	SEC A	SEC B	SEC C	SEC D	SE0
Roads should be broadened	8.5	9.1	8.5	9.1	7.8	8.5	7.4	8.2	8.6	8.2	8.6	8.7	8.4	8.3	8.3	8.7
Traffic should be controlled in a better way by the traffic police	8.3	8.0	8.9	9.1	7.4	9.1	8.7	8.0	8.5	7.8	8.2	8.2	8.2	8.2	8.5	8.5
State transport buses should be available in many more route	8.3	8.8	7.2	8.6	8.4	8.3	7.5	8.3	8.6	8.3	8.5	8.6	8.3	8.0	8.2	8.6
More flyovers should be constructed	8.0	8.4	8.1	7.7	7.3	7.2	8.2	8.4	8.9	7.8	8.2	8.6	8.0	7.5	8.1	8.0
State transport buses should be more frequently available	7.8	8.3	7.5	7.4	7.2	7.9	7.2	7.4	8.7	7.6	8.1	8.1	7.8	7.5	7.7	8.1
Roads should be made free of hawkers and encroachment	7.0	7.5	7.0	6.7	7.0	7.0	7.4	6.7	7.1	6.7	7.1	7.0	7.1	6.9	7.1	7.0
Private vehicles like cars and two wheelers should be discouraged by imposing petrol cess and road tax	7.0	6.6	6.7	6.6	7.3	7.1	7.5	6.5	7.2	7.0	7.4	6.6	7.0	7.1	6.8	7.2
We should have more autos	6.5	5.4	6.6	6.1	7.0	6.1	7.2	7.1	6.2	7.1	6.5	5.7	6.4	6.6	6.7	6.6
There should be separate lanes for bicycles and buses	6.4	5.6	6.6	7.2	6.8	6.6	6.8	6.4	6.2	6.7	5.8	6.4	6.3	6.6	6.6	6.2
We should have modern systems like sky bus and metro	6.3	5.4	6.5	5.7	6.0	6.7	6.5	6.7	5.9	7.1	6.2	5.9	6.5	6.5	6.2	6.2
Footpaths should be provided in all roads for the comfort of pedestrians	6.1	6.3	6.5	6.3	6.2	6.4	5.8	6.3	5.3	6.3	5.7	6.2	6.3	6.4	6.2	5.6
Separate parking space should be provided so that roads are free for traffic	5.8	6.4	6.1	5.9	6.6	5.8	5.5	5.9	5.2	5.6	5.4	5.9	6.2	6.0	5.7	5.5
Pay and park concept should be introduced	5.1	5.4	4.9	4.8	6.0	4.4	5.3	5.3	4.6	4.9	5.2	5.2	4.9	5.3	4.9	5.0



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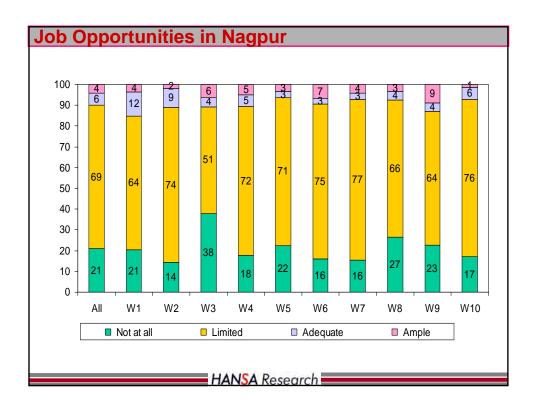


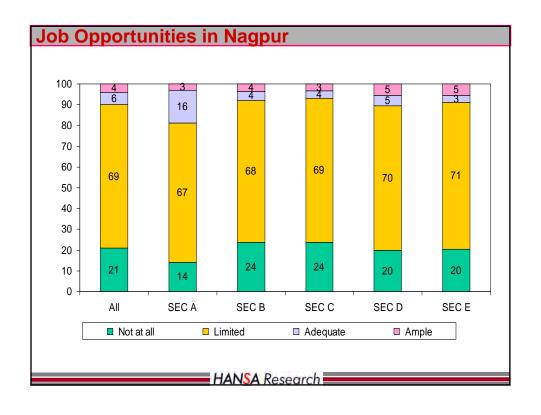
Job Opportunities

The following issues was covered about Job opportunities -

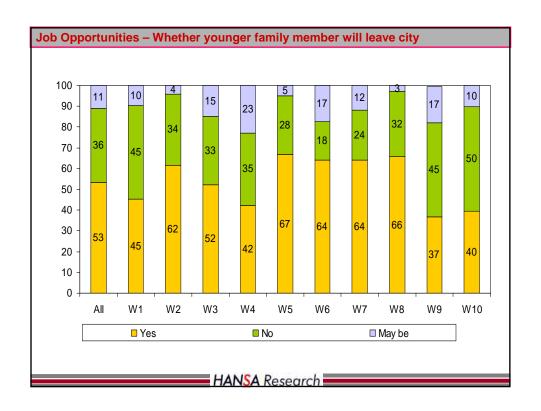
- ✗ Whether there is adequate job opportunities available in Nagpur
- * Whether younger members of family will leave Nagpur as they grow older
- Reasons for leaving

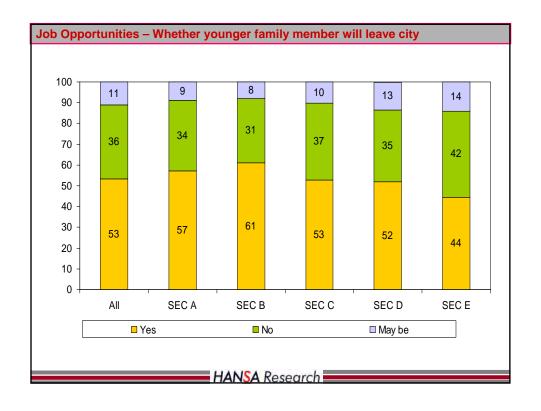
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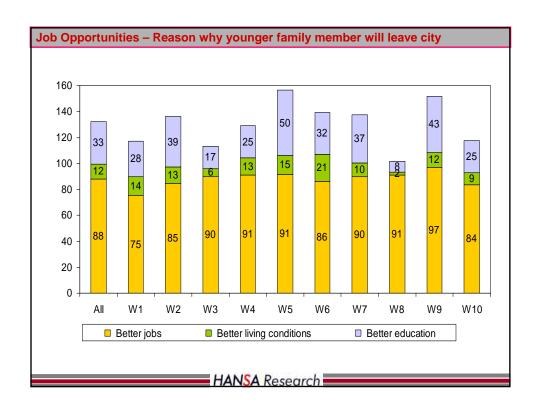


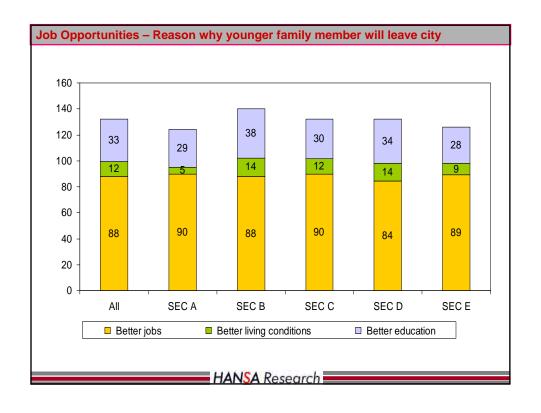


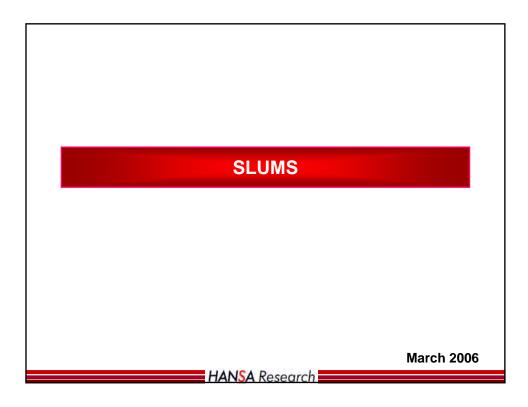
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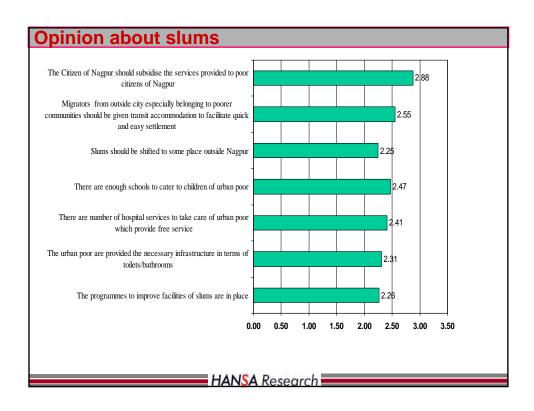
Slums of Nagpur

The following issues was covered about slums -

- Opinion about slums.
- Usability of public toilets
- **✗** Water availability in public toilets

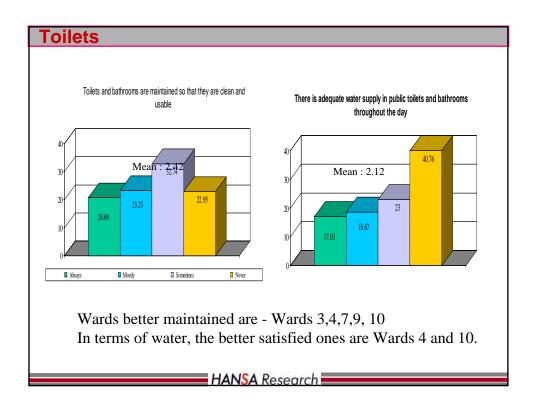
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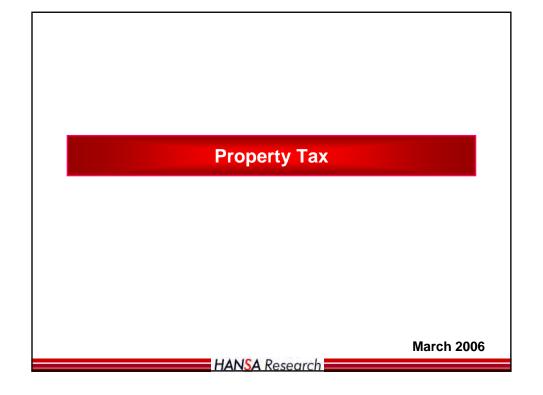
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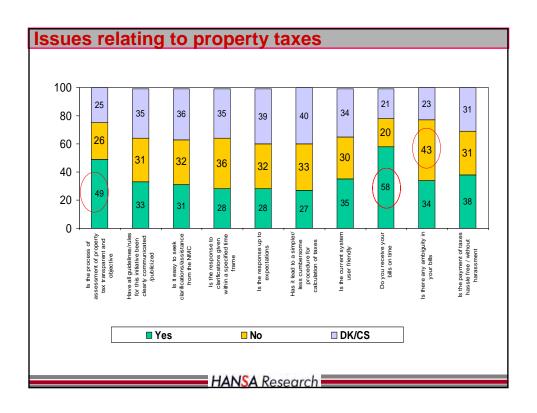
	All	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
The programmes to improve facilities of slums are in place – Agree	37	23	65	60	39	47	54	27	23	31	24
Disagree	62	77	35	40	61	53	46	72	77	69	76
The urban poor are provided the necessary infrastructure in terms of toilets/bathrooms - Agree	35	20	58	47	37	43	45	29	29	28	25
Disagree	65	80	42	53	62	57	55	70	71	72	75
There are number of hospital services to take care of urban poor which provide free service - Agree	44	26	62	46	51	52	50	39	43	42	38
Disagree	56	74	38	54	48	48	50	60	57	58	61
There are enough schools to cater to children of urban poor - Agree	47	36	64	48	47	57	60	40	43	44	41
Disagree	53	64	36	52	52	42	39	59	57	56	59
Slums should be shifted to some place outside Nagpur – Agree	35	28	46	37	50	22	61	31	33	34	37
Disagree	64	71	54	63	49	77	39	68	67	66	63
Migrants from outside city especially belonging to poorer communities should be given transit accommodation to facilitate quick and easy settlement – Agree	52	47	55	49	53	71	78	41	43	43	45
Disagree	48	53	45	52	47	28	22	57	57	57	55
The Citizen of Nagpur should subsidize the services provided to poor citizens of Nagpur - Agree	67	72	77	75	67	81	82	59	59	60	50
Disagree	32	28	23	25	32	19	18	40	41	40	50

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Grievance redressal

The following issues were covered -

- * Awareness of location where to register a complaint
- **Experience** in complaints registering.
- Preferred options for complaint registering.
- **▼** Type of information received from NMC
- Adequacy of information
- **✗** Expected source of information from NMC

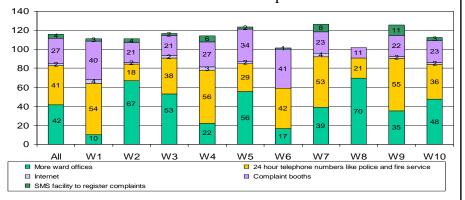
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Awareness of area of complaint

Only 18% knew where to go to complain in NMC and only 14% have ever sent any complaints to NMC. Awareness was better in ward 3 (42%), 2 (22%) and 7 (22%).

While 62% of those who complained, mentioned that their complaints were resolved, the other 38% mentioned that their complaints did not get resolved with in a reasonable time frame. Only in ward no. 3, 62% said that their complaints did not get resolved

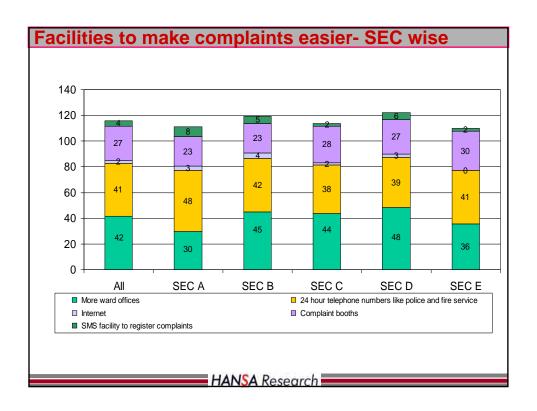
Facilities to make complaints easier

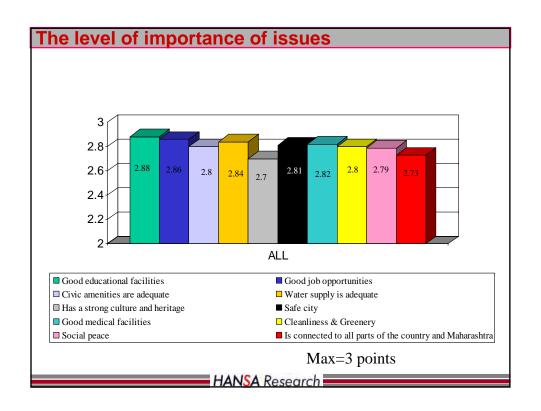


Citizens are looking for two way communication where one will get a response rather than Internet and SMS which is one way communication

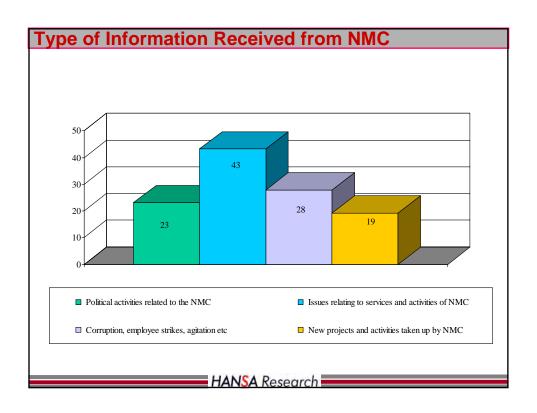
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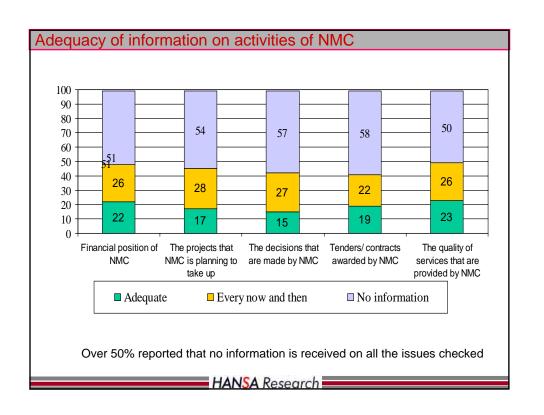
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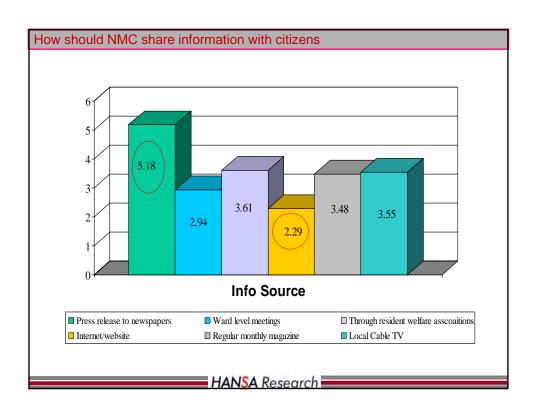


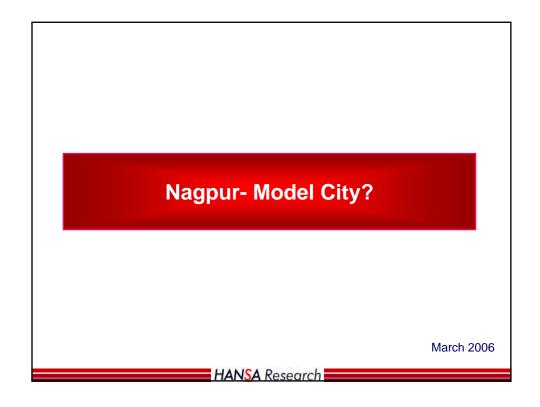
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Suggestions to make Nagpur as model city

The following issues were covered -

- Citizens dreams for Nagpur
- ✗ Important services required by citizens from NMC
- **★** Area to be improved Distribution of 100 crores.
- ✗ Who should provide municipal services in Nagpur

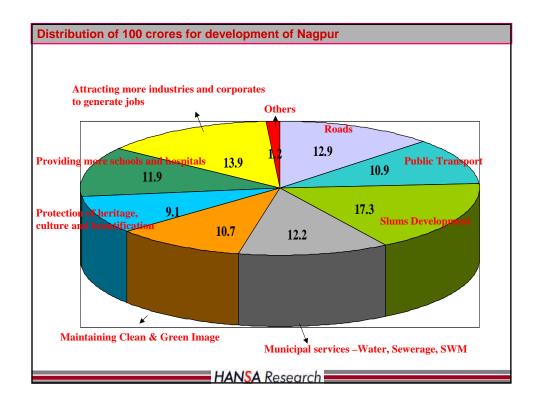
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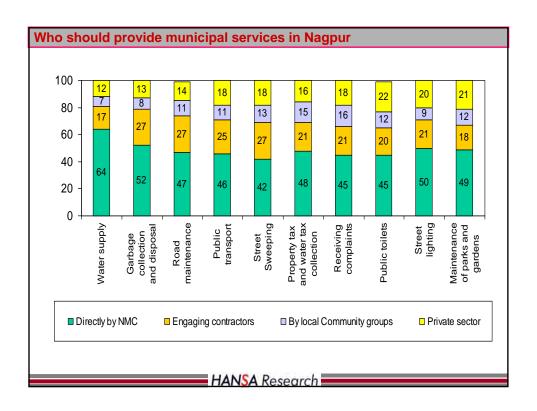
	All	W1	W2.	W3	W4	W5	W	W	W	W	W	SEC	SEC	SEC	SEC	SEC
	All	WI	W2	W3	W4	wo	6	7	8 8	9	10	A	B	C	D	E
Clean and green city	64	67	67	60	68	72	80	63	54	68	47	67	67	66	64	57
Safe and peaceful city	52	45	61	52	45	66	41	56	33	59	49	50	56	49	54	50
Modern city with world class infrastructure	30	12	41	44	26	53	22	31	18	30	22	32	40	29	30	21
City known for its culture and heritage	22	8	40	20	7	45	12	27	7	25	18	26	28	21	22	16
Growth engine for central India	17	5	30	15	8	41	12	23	1	19	7	20	23	19	16	11
Employment facility	6	0	2	7	5	5	8	10	17	4	11	5	6	7	5	9
Electricity supply should be good	4	1	1	-	12	4	2	10	0	7	4	4	1	5	6	5
Water supply should be improve	3	0	1	1	9	3	5	8	1	5	0	-	2	3	5	5
Should provide park facility	3	1	2	1	5	4	6	1	4	1	3	3	3	3	2	2
Should plant trees	2	2	2	1	4	2	3	1	3	1	4	3	3	3	1	2
Pollution free	2	1	4	3	-	3	5	-	4	1	2	2	1	2	1	3
Should provide good facility in Nagpur	2	1	-	4	2	1	2	1	2	2	1	1	2	2	1	1
Should construct pakka road	2	1	1	2	4	0	4	2	1	2	1	3	1	2	2	1

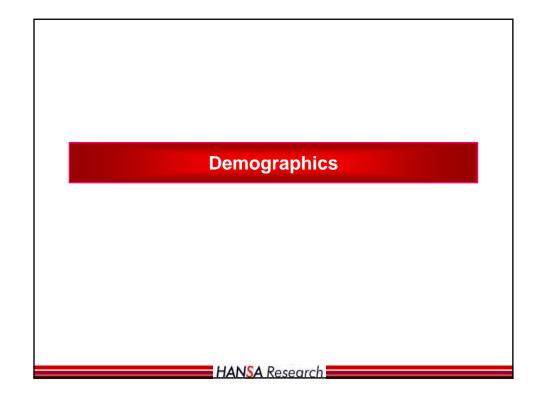
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Weighted rank $- \max = 13$

	All	W1	W2	W3	W4	W5	W 6	W 7	W 8	W 9	W 10	SEC A	SEC B	SEC C	SEC D	SE0 E
Water Supply	34	31	21	16	36	36	33	34	38	46	40	27	30	32	36	42
Road Arrangement	33	43	34	25	21	36	44	30	14	45	35	35	31	33	35	33
Should provide garden facility	31	36	38	43	23	35	21	22	39	24	27	32	35	29	33	26
Should arrange electricity	24	21	7	15	35	22	32	29	18	37	26	24	22	21	29	25
Should arrange road light	10	7	11	15	4	8	21	15	15	4	5	10	8	11	11	9
Should provide hospitals	9	3	5	14	20	7	-	3	21	6	14	4	8	10	8	12
Cleanliness should be there	8	4	7	3	4	10	3	12	19	7	9	4	9	9	6	11
Self Tap	8	4	9	11	3	4	1	12	5	14	11	3	5	7	9	13
Drainage Arrangement	7	13	3	2	6	5	6	9	10	5	10	8	3	9	6	10
Road Cleanliness should be there	6	14	10	4	2	8	3	4	8	4	1	10	5	7	6	4







ducation	n (det	ails	5 –	Acr	oss	5 W	arc	ls						
Wards	1	2	3	4	5	6	7	8	9	10	SEC A	SEC B	SE C C	SE C D	SE C E
Illiterate	6	7	1	3	5	4	4	12	7	6	10	1	1	2	6
Literate but no formal schooling	0	0	-	-	-	1	-	-	0	-	2	-	0	-	0
School-Up to 4th standard	8	7	3	4	8	5	8	11	9	10	12	1	1	5	9
School 5th to 9th standard	26	20	27	19	32	25	24	26	34	34	24	3	8	20	46
SSC/HSC (10th- 12th)	33	27	39	44	28	38	41	34	32	26	31	19	41	61	27
Some college (incl.dip) but not graduate	5	8	6	4	6	6	2	3	3	5	7	8	9	5	5
Graduate- Gen(B.A.,B.Sc.B. Com.)	14	20	15	16	12	14	12	10	10	13	13	37	28	6	6
Graduate- Pro(B.E.,M.B.B.S. ,B.Tech)	2	4	5	3	2	2	2	1	-	3	1	12	3	0	0
Post-Graduate- Gen(M.A.,M.Sc.,M .Com,M.Phil,Phd)	4	6	5	3	7	6	5	3	5	2	1	16	9	1	0
ALL (Unwtd)	20 15	242	178	165	169	289	111	239	172	220	230	236	400	497	474
ALL (000's)	15 07	195	134	116	126	214	77	169	124	177	176	185	314	338	365
					HAN	SA R	200	arch							

occupation (deta	ails	5 –	Ac	ro	SS	<u>wa</u>	<u>rds</u>	3 &	SE	EC				
Wards	1	2	3	4	5	6	7	8	9	10	A	В	С	D	Е
Unskilled worker	14	12	8	23	9	10	11	13	22	16	15	1	1	2	17
Skilled worker	10	7	11	13	11	13	11	9	7	9	7	-	6	15	14
Petty trader	8	8	3	7	18	6	6	6	2	11	8	1	4	8	17
Shop owner	6	5	4	10	10	4	5	6	3	4	9	7	16	5	2
Businessman / Indu -None	1	2	-	2	-	2	2	-	1	0	1	5	2	0	-
Businessman / Indu -1-9	1	3	3	-	-	-	-	1	0	1	-	5	1	-	-
Businessman / Indu -10+	0	0	-	-	1	-	-	1	-	-	-	2	-	-	-
Self-employed professional	1	2	-	3	1	-	-	1	-	2	-	5	1	0	0
Clerk/Salesman	6	5	4	4	7	6	9	7	6	6	5	2	12	9	3
Supervisory level	1	1	2	3	1	3	1	0	-	1	1	1	2	2	1
Officer/Executive-Junior	2	3	4	1	1	1	-	1	2	1	1	10	1	0	-
Officer/Executive- Middle/Senior	1	1	1	2	1	1	2	3	-	1	1	7	1	1	0
Housewife	37	33	47	21	31	40	40	39	40	38	37	36	37	44	31
Retired	2	1	1	-	1	2	-	1	1	2	3	3	2	1	1
Student	12	16	12	11	7	13	12	11	13	7	12	15	13	12	12
Not Working	1	0	-	-	1	-	-	1	2	1	1	0	0	0	2
ALL (Unwtd)	201 5	242	178	165	169	289	111	239	172	220	230	236	400	497	474
ALL (000's)	150 7	195	134	116	126	214	77	169	124	177	176	185	314	338	36
			_ h	IAN	SA R	200	arch								

Sec details – Across wards

Wards	1	2	3	4	5	6	7	8	9	10
A	26	16	12	8	11	8	9	5	11	10
В	20	23	25	31	20	26	16	15	16	22
С	19	26	20	17	29	29	24	22	21	18
D	18	22	23	28	25	26	25	29	27	22
Е	17	14	19	15	15	11	26	30	25	27
ALL (Unwtd)	2015	242	178	165	169	289	111	239	172	220
ALL (000's)	1507	195	134	116	126	214	77	169	124	177

HANSA Research

Gender	detai	Is – A	cross	ward	S
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Wards	1	2	3	4	5	6	7	8	9	10	A	В	С	D	Е
Male	57	47	67	59	48	45	52	47	49	54	51	51	45	61	52
Female	43	53	33	41	52	55	48	53	51	46	49	49	55	39	48
ALL (Unwtd)	2015	242	178	165	169	289	111	239	172	220	230	236	400	497	474
ALL (000's)	1507	195	134	116	126	214	77	169	124	177	176	185	314	338	365

HANSA Research

Wards	1	2	3	4	5	6	7	8	9	10	A	В	С	D	l
18-24 years	29	24	15	17	24	22	20	23	19	22	16	18	23	27	
25-34 years	21	31	39	40	33	30	21	39	32	36	25	35	30	36	
35-44 years	18	25	28	19	18	27	17	18	14	17	24	22	20	14	
45-54 years	12	13	12	7	11	11	18	12	12	11	12	12	12	10	
55+ years	21	7	6	17	15	10	24	7	23	14	24	13	14	14	
ALL (Unwtd)	2015	242	178	165	169	289	111	239	172	220	230	236	400	497	
ALL (000's)	1507	195	134	116	126	214	77	169	124	177	176	185	314	338	

Wards	1	2	3	4	5	6	7	8	9	10	A	В	С	D	Е
Since Birth	71	82	88	78	71	78	89	88	87	86	74	84	78	83	84
Over 10 Years	18	12	4	7	16	16	6	7	7	9	16	10	11	10	9
5 - 10 Years	7	5	7	9	8	5	4	3	2	4	6	4	8	5	4
3- 5 years	2	0	-	5	3	1	-	1	3	1	3	2	1	2	2
< 3 Years	2	0	1	1	1	1	-	1	1	-	2	1	1	-	1
ALL (Unwtd)	2015	242	178	165	169	289	111	239	172	220	230	236	400	497	474
ALL (000's)	1507	195	134	116	126	214	77	169	124	177	176	185	314	338	365

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ANNEXURE I: HANDOUTS GIVEN DURING PRIORITIZATION WORKSHOP ON 12^{TH} MARCH 2006

City Development Plan for Nagpur

Prioritization Workshop

Strategies and Action Plan

(Please refer to this for group discussion and group level prioritization exercise)

March 12, 2006



Nagpur Municipal Corporation

Vision and Mission Statement

The vision for the Nagpur was formulated by the stakeholders through the consensus approach and continued consultation with the community on strengths, current issues, concerns, problems and desirable future focus areas. The mission statements were also formulated by the citizens in the previous workshop (5th February, 2006) and further refined during focus group discussions during first week of March 2006.

Why Nagpur is Important

The stakeholders were asked to articulate why Nagpur is important for them; various opinions were articulated and the following characteristics emerged as the defining ones, shaping the identity of Nagpur:

- o Centrally located in India with large catchments spread in all directions
- Rich mineral resource base
- o Well connected to all major cities in India through road, rail and air networks
- o Excellent medical and educational facilities available in the city
- o Clean and green image of the city

Vision for Nagpur

As a result of above-mentioned workshops with NMC officials and stakeholders in Nagpur, the vision for Nagpur is emerging as follows:

The Growth Nucleus of Central India

... An eco city that provides adequate, equitable, sustainable access of urban services for all citizens

... A city that is safe, livable and promotes growth of its citizens

The workshops have also indicated that to achieve this vision, NMC should support the following growth themes:

- o The city should attain a key position in IT, ITES and health services related industries
- Support industrialization in its hinterland
- o Promote education, culture and tourism

Local Economic Development

Mission statement: Nagpur should be a city having a vibrant economy with employment opportunities and infrastructure, to support good quality of life.

Strategies and action areas

- Develop collaboration and association between institutions and industries of Nagpur to further establish the dynamic role of Nagpur as a hub for agro-processing, steel and allied industries, textiles, transportation and IT.
 - o Joint Coordination and curriculum development, facilitation of R&D for industries in institutions, impart training in institutions by industry
- Ensuring adequate power supply to retain the newly acquired role of investment destination
 - o Immediate measures to cover the current shortfall through demand management, captive power generation and appropriate planning for the future
- NMC should play a more active role in fostering an environment, which is conducive to business.
 - O NMC should provide a single window to all business and commercial groups to deal with matters pertaining to various civic services and approvals. It should have an economic development cell, which will act as an interface for all issues raised by commercial and business groups.
 - o Simplify the processes relating to industries to support investment activities in the city.

Project and Investment for Economic Development:

All investments and projects suggested as part of CDP will support economic activity directly or indirectly. For e.g. markets, truck terminal may be developed, for which NMC needs to identify and develop projects.

Land Use and Housing

Mission statement: Modern land management practices that promote economic development in an environmentally sustainable manner

Strategy and action areas

- Inner city/ core areas revitalization
 - o Decongesting the core areas through selective relocation of commercial and trading activities
 - o High Density high rise provision must be made in the old city limits
 - o Identify land in the peripheral areas and provide connectivity and other infrastructure
 - o Building Regulation policies to be framed to encourage decongestion of the core areas through building norms, FSI norms & incentives, parking norms
- Discourage development in critical, ecologically sensitive areas
 - o Critical locations with respect to environmental sensitivity need to be identified and demarcated by the town-planning department.
 - Special DCR need to be made applicable to these areas to restrict any encroachments and unauthorised developments.
 - Private land owners within large masses of green spaces within the municipal limits like PKV, NEERI, VNIT etc. must be involved in the planning process
- Develop CBDs in other parts of city
 - The assessment with respect to the current land use indicates that there is still scope for commercial activity. This however shall be dispersed and more business districts should be developed which will decongest and reduce load on the core city areas.
- Compatibility of land uses
 - O Carry out study to identify corridors where densification is possible. NMC must calculate the carrying capacity of various areas on the basis of certain indicators, for example the water source, eco-sensitivity, cultural or heritage significance etc.
 - o In selected areas, where the carrying capacity still exists, the concept of paid FSI must be explored. The contractor must be given extra FSI with extra payment.
 - Educational institutions/ work places and residential areas being located in opposite directions generate traffic demand, which could otherwise be avoided if land use was compatible. The DP, which is due in 2007 needs to address this issue as availability of land is not a constraint.
- Facilitate housing for slum population and transit shelters for the EWS/ LIG migrant population
 - o Encourage builders, developers to develop mass housing under incentives. These aspects will need to be taken into account in the new Development Plan to be prepared.

- Peripheral areas' (metropolitan regions) development needs focus and integration with transportation networks through coordinated efforts from NMC and NIT
 - The potential development areas in the peripheral areas need to be linked through an efficient arterial structure within /outside the city. These would provide alternatives to these areas bypassing the core of the city resulting in decongesting the core. The arterial structure is proposed in such a way that it will take care of future vehicular growth. Thus NMC shall undertake an exercise to widen these roads and connect the missing links.
 - o Provision of adequate land for transportation corridors, transportation hubs and network to provide safe efficient and affordable mobility.
- Practical and demand based land use planning
 - The preparation and implementation of the next development plan should be accelerated to retain its relevance and it should be revised every five years based on land demand for different uses.

Project and Investment for Land Use: Investments need to be quantified for the above strategies. However this being more of a planning exercise, investments cut across all sectors and have been addressed in the relevant sectors.

Urban Environment

Mission statement: Nagpur to be developed as an environmentally sustainable city

Strategy and action areas

- Conserve Environmental resources
 - o Identification of sources and points of pollution
 - The protection of water bodies, lakes and open spaces from further encroachments shall be carried out in a co-ordinated way. The rivers/ lakes/ tanks/ nallahs should be clearly marked and notified to prevent further encroachment.
 - Tree census should be carried out annually and appropriate roadside plantations should be encouraged in all areas. Plantation of trees must be encouraged through schools, NGOs and by undertaking tree plantation drives.
 - The Development Plan must identify bio-diversity areas/ corridors and make reservations for them appropriately.
 - o Water harvesting and soil conservation must be emphasized.
 - Vacant plots must be identified and it must be ensured that there is an open space in every society. This plot must be developed and maintained by the concerned authority.
 - Eco-friendly building concept should be promoted and corresponding policy and incentives must be in place.
 - o Special budgetary provision must be made in annual budget for environment as planned activity to implement and monitor the recommendations of annual environmental status report. Environmental impact assessment study should be carried out for all the major projects.
- Increase water holding capacity of the water bodies
 - o De-silting shall be carried out to increase the water holding capacity and to remove the toxic and hazardous materials that reached the lake/ riverbeds.
 - Hydraulic capacity of the nallahs and water bodies must be improved through construction, widening and deepening of sidewalls.
 - Develop surroundings for recreation purpose and stop further flow of wastewater into the water bodies.
- Air pollution must be controlled
 - O Public transport must be strengthened in order to discourage usage of vehicles.

- O Vehicle free zones must be declared. Especially in the old city congested areas, to ensure conservation of heritage structures, motorised vehicles should be avoided on select roads.
- o There should be synchronization of traffic signals so that the waiting time is reduced.
- o Strict enforcement of pollution norms must be ensured.

Air Quality Monitoring

- o A framework for air pollution monitoring and management needs to be in place.
- At least 10 air quality monitoring stations shall be set up by NMC/ MPCB at select locations in the city (at busy junctions and near industrial estates) and main parameters such as CO and HC shall be monitored as per the guidelines.
- O It is imperative to establish a database on air quality indicators and initiate research on health effects of particulate matter. The database shall include sources and emission concentrations and identify non-scheduled industrial and commercial premises in the city with air pollution potential to develop emission reduction strategies.

Control Noise Pollution

- o A Db meter must be placed in prime areas to bring awareness amongst the citizens about the degree of noise pollution.
- o In zones declared as silence zones, strict action must be taken against non-compliance.

Reduce waste generation

- This can be made possible through awareness creation and eliciting active community involvement in source segregation practices. The NMC shall take a pro-active role in sensitising the communities on waste minimisation through a robust awareness campaign and education with support of NGOs and other agencies.
- o Incentives and awards should be announced for the most active citizens/ colonies.
- Vermi-composting must be encouraged and it must be made compulsory in newly constructed buildings, institutional premises, government buildings etc.

Create awareness about environment conservation measures

- o Bring awareness through school children and usage of local TV channels and newspapers.
- o NMC can organise workshops giving demonstrations of water saving measures, waste reducing and composting techniques.

Development of garden, open spaces

- o Develop and maintain gardens at different neighbourhood levels
- Encourage citizens' contribution towards maintenance of neighbourhood parks

Project and Investment for Urban Environment:

Investments and projects for environment improvement are suggested as part of the following sectors:

- Solid Waste Management
- Drainage and River Improvement
- > Slums
- > Projects Proposed as part of Traffic and Transportation will also improve environment by reducing vehicular pollution.

Urban Poor and Slums

Mission statement: Nagpur should become a slum free city in the next decade

Strategy and action areas

- Identification and notification of slums
 - o Lastly, a large proportion of the notified slums in Nagpur are well-developed residential areas and not merely jhuggi jhopdi clusters. Such slums should be de-notified and brought under the tax net. This would not only add to the corporation's revenue but also allow focus of funds on priority areas.
- The decision making for prioritisation of projects for slums shall be gradually shifted from the NMC to the grass roots level. NMC will play the role of facilitator and financer.
 - O Allocate funds for slum improvement from its won budget and various other state/ central government schemes.
 - o Identify the slums and announce the budgeted amount.
- Accommodation for the urban poor
 - Rehabilitation must be done in low rise buildings
 - o Dormitories need to be created for construction workers and other types of labour
 - o Housing colony can be established for people with assured income. e.g. servants colony
 - While declaring zones as industrial, provide reserve lands for EWS/ LIG in these areas as workers are bound to come there

Slum Networking

- O Slum networking would involve mapping and integrating slum locations and the natural drainage paths of the town with the parks, playgrounds etc. to form a continuous network of green corridor. The approach is to help build infrastructure in an economical way and also target the environmental improvement of the surroundings.
- o The slum dwellers must be involved in the cleanliness drive.
- Awareness among beneficiaries towards project implementation
 - Make beneficiaries partners in their own development works and implementation Encourage beneficiary contribution in order to ensure responsibility and ownership of the new housing by the dwellers
 - O Hold frequent meetings of the slum dwellers along with the NMC officials (ward officer) wherein the beneficiaries can give their contribution to project development and also take the responsibility of implementing these projects

- o The beneficiaries should be educated on the project, which is being planned in their neighbourhood, so that they can better monitor the project.
- o Prioritising of projects and project implementations with active participation from beneficiaries right from the planning stage.
- Social audit conducted through the formation of Vigilance committees. Form groups among the beneficiaries and involve them in the implementation of the projects.
- Educate them on the importance of proper sanitation, pucca housing and education for children.

Project and Investment for Slums and Urban Poor: Total investment Rs.500 crores

- ➤ Investment of Rs.250 crores under a Public Private Partnership model forming part of SRA
- ➤ Housing for EWS and LIG will entail an investment of Rs.175 crores
- ➤ Infrastructure provision in slum areas will require an investment of Rs.75 crores

Roads, Transportation and Traffic Management

Mission statement: Safe and efficient traffic management

Strategy and action areas

- Improve Public Transport System
 - o Add Rolling stock to the existing system, preferably CNG buses
 - The number of buses plying must be as per the CIRT norms. The procurement of buses must be phased over the next 2-3 years.
 - o NMC/ MSRTC should explore the option of private partnership for the operation and maintenance of these buses.
 - New depots, bus shelters and display systems at depots must be established keeping in mind the BRTS (Bus Rapid Transport System) plan.
 - o Improve the corridors with dedicated bus lanes, pedestrian facilities, bus stops etc
 - o Public transport to be cost effective to increase the patronage
 - o Timely and efficient accessibility must be provided by the public transport system especially in the old city areas in order to discourage usage of private vehicles
 - Explore the feasibility of MRTS NMC/ MSRTC must prepare a framework for the same and a consultant must be appointed to suggest ways and means to achieve it. The BRTS must be implemented in consultation with the citizens.
- Prepare a DPR in comprehensive manner to include BRTS, road widening, parking facilities etc
 - Prepare a comprehensive and scientific traffic plan for the city
 - O Hawker zones must be created and continuous efforts must be made by the NMC to avoid encroachments
 - o Re-planning of the old bazaars in order to bring about efficient utilization of space
- Efficient and scientific traffic management
 - Discourage private vehicle usage and other measures to improve traffic management
 - o Implement computerized signalling for better traffic management
 - Augmentation of traffic police
 - o Traffic Calming Measures
 - o Establishment of cycling networks and pedestrian paths
 - o The footpaths must be wide and walkable
 - o It must be ensured that at least 60 per cent of the roads must have footpaths (i.e. roads 20 feet and above). Footpaths in internal roads must not be heightened.

- Have a parking policy in place
 - o Increase parking charges especially in prime areas
 - o Parking space must be provided for auto rickshaws.
 - o The PPP option can be explored for provision of cycle parking.

Project and Investment for Roads, Traffic and Transportation: Total Investment Rs. 2550 crores

- ➤ Outer ring Road Rs.650 crores
- ➤ Road widening / improvements Rs.200 crores
- Flyovers / Rail over bridges Rs.150 crores
- ➤ Traffic Management Rs.50 crores
- ➤ MRTS via Public Private Partnership Rs.1500 crores

Water Supply

Mission statement: Water for all and 24 x 7 supply: safe, equitable, reliable, adequate water supply Strategy and action areas

- o Refurbish the old distribution system
- Reduce transmission and distribution losses
- o Conduct a leak detection study and reduce the UFW
- o Conduct a study to check the quality of water being supplied
- o Identify illegal water connections and discourage public stand post (PSP)
- o In slum areas, there are several places wherein there is a PSP and the nearby households have water connections. Such PSPs must be removed.
- It is possible that the water is getting polluted as water from a nearby sewerage line seeps in.
 Such potential and existing polluting sources need to be checked. Systems refurbishments shall be taken up.
- o Prepare an asset inventory and map the water supply systems for effective monitoring
- o Conduct an energy audit
- o Individual connections to all households
- o Rain water harvesting to be made compulsory for al new projects
- o The metering must be as per the usage and not on the basis of supply

Project and Investment for Water Supply: Rs.453 crores

- > Sourcing of water: Rs.400 crores
- ➤ Leak detection and water audit: Rs.28 crores
- ➤ Energy audit: Rs.25 crores
- > Strengthening of water supply distribution system: Rs.115 crores
- ➤ Water recycling and reuse: Rs.250 crores through Public Private Partnerships

Sewerage and Storm Water Drainage

Mission statement: 100% coverage in sewerage collection and treatment and strengthening and rejuvenation of natural drainage system

Strategy and action areas

- Ensure no sewerage is let untreated into the water bodies in and outside the city
 - o Decentralise the system of operations for effective service delivery
 - Ensure location of STPs in co-ordination with river and lakes conservation plan, such that the benefits are maximised.
- Provide universal access to clean, affordable sanitation facilities at public places
 - o Improve and ensure access to sanitary facilities for the urban poor and slum dwellers. Encourage pay & use category of public conveniences with community involvement in the maintenance of the same.
- NMC must focus on rejuvenation of Nag and Pilli rivers, nallah canalization and hence strengthening the natural drainage system. Lake rejuvenation must be included in the development process as priority area.
- All the roads must have storm water drains to prevent flooding during peak periods.

Project and Investment for Sewerage system: Rs.520 crores

North zone: Rs130 crores

➤ Central Zone: Rs240 crores

> South zone: Rs150 crores

Project and Investment for Drainage: Rs.250 crores

- ➤ Drainage alongside road Rs50 crores
- ➤ Nallah canalization Rs50 crores
- > Strengthening existing nallahs Rs50 crores
- ➤ Rejuvenation of Nag and Pilli rivers Rs50 crores

Solid Waste Management

Mission statement: Clean city, bin-free city

Strategy and action areas

- Increase the technical capabilities of NMC's solid waste management department
- Ensure source segregation and door-to-door collection
 - o Further enhance citizen participation in source segregation to 100%
 - Outsource the communication campaign to NGOs/ environmental organizations.
 - Campaigns to be initiated for awareness among the urban poor and slum dwellers towards better SWM practices
 - Institutionalize rag-pickers association and integrate them into the system in primary collection activities
- To end the current waste dumping practices, development of landfill site is a must.
- Waste to energy projects should also be encouraged to improve financial viability.

Project and Investment for Solid Waste Management: Rs.50 crores

➤ Sanitary land fill: Rs25 crores

➤ Bin-free city: Rs25 crores

Culture and Heritage

Mission Statement: Gateway to the tiger country

The stakeholders feel that it should not only act as an entry point to Vidarbha region with great tourism potential, but also be seen as a tourism destination itself.

Strategy and action areas

- NMC should prepare a heritage conservation plan.
 - Listing and documentation about artefacts, structures, buildings etc. and the list should be updated on a continuous basis.
 - O Based on the criteria defined by the heritage committee, precinct and heritage zone would be identified and planned for.
 - o To retain the character of these heritage zones and precincts, separate byelaws and regulations would need to be prepared for each of them. These need to be integrated in the city's overall development plan with respect to zoning and building regulations.
- Ensure a sense of ownership of the heritage structures among various stakeholders
 - o There should be increased interaction with the heritage structure owners.
 - o NMC should create awareness amongst the people and organize heritage walks and tours.
 - o It should reach out to private entrepreneurs for these activities.
 - There is a need to create a separate fund for these conservation activities from the budgetary allocations of NMC.
 - o NMC needs to build its capacity through training of employees
 - The Central Public Works Department (CPWD) and Public Works Department (PWD) are in charge of the maintenance of a very large number of heritage buildings in the Nagpur. A separate conservation cell needs to be created in these organizations also.
- The plan may be supported by heritage conservation policy for the city.
 - The policy should cover aspects of documentation (status and condition of the heritage structures), strategy plan (what needs to be done) and implementation plan (how it should be done).
 - o Tourism may be developed on themes of heritage, wildlife, religion, health or education.
 - Adequate facilities should be provided to tourists in terms of affordable accommodation, information and booking services, inter city and intra city transport.

Project and Investment for Culture and Heritage

Detailed projects need to be identified. Though it is recommended that a specific provision is made by NMC from its budgetary allocations.

Medical and educational infrastructure

Strategies and action plan

- The future steps towards improvement in the health care facilities should be based on following principles:
 - Shift from target oriented to community oriented approach
 - Participatory planning in medical care
 - o Emphasis on quality health care and client satisfaction.
 - o Emphasis on preventive health care measures
- Eradication of preventable diseases by 2011
 - o Supply of good quality drinking water
 - o Strict control and supervision of hotels roadside food vendors is necessary.
 - o For eradication of vector, control of mosquito menace by 2011
 - o Control of Stray / Street Dogs is very essential to prevent infection of Rabies.
 - o Total Vaccination of the population as per WHO schedule should be completed by 2011
- Consultancy medical advice should be available by way of Internet to all the population.
- Making Nagpur a medical services hub
 - O City should have convention centre for conducting major medical conferences and for providing health care to the population.
 - o Government should encourage multi-speciality hospitals.
 - o NMC should provide concessions in the form of affordable cost land, exemption of octroi on equipment & medicine, subsidy on water rates and taxes, etc.

Reform plans

- Emergency Care: NMC should provide Emergency Medical vans equipped with medicines for accidents and trauma.
- Involving private doctors by providing them with free space in the existing structure of corporation dispensaries. This will ensure quality medical care to the under privileged.
- Encourage public private partnership in primary education for maintenance buildings and infrastructure
- Ensure quality of education in schools through standardization and incentives

Project and Investment for Medical and educational infrastructure

• Detailed projects need to be identified. Though it is recommended that a specific provision is made by NMC from its budgetary allocations.

Municipal Finance & Governance

Strategy and action areas

- Increasing revenue generation
 - o Increasing realisation from existing taxes (within existing tax structure parameters) through better identification, billing, assessment, collection and enforcement
 - o Carrying out changes in tax structure (principles underlying purpose, tax base, rates, slabs, exemptions, rebates, etc.)
 - o Introducing stepped tariff structure for water connections (This would require complete metering of all connections in the city.)
 - o Appoint an agency for carrying out a cost audit of all the expenditure, incurred service-wise
 - Making all-round improvements in the tax administration process to facilitate revenue generation.
- In addition to revenue mobilisation, NMC needs to explore expenditure reduction measures towards energy efficiency, fuel consumption and other items where reduction is possible after conducting proper cost audit of all major items of expenditure.
 - Using the accrual based double entry accounting system for taking better informed decision making
 - Outsourcing non-administrative and non-technical operations of most of the municipal functions like
 - Property Tax database management, demand notices generation, arrears collection, etc.
 - Water billing
- Controlling the growth of expenditure
 - NMC needs to create such funds like the depreciation fund, infrastructure fund disaster management fund, etc. to meet unplanned and emergency expenses to have prudent financial management.
 - Preparation of budgets should be more rigorous and departments should be made accountable for meeting budgetary goals

Governance

- Performance indicators for various urban services provided
- Public Disclosure of financial performance and stating an open house to ensure transparency in NMC operations

- Communicating with the public and within the organisation to build popular support for the reform initiatives
- o Resolving confusion created on account of dual entities (NMC and NIT) operating in the city

Other Projects and Investment: Social Amenities: Rs15 crores

- ➤ Destitute home Rs 1 crore
- ➤ Marriage halls (10) Rs 5 crores
- ➤ Night shelter Rs 4 crores
- ➤ Public toilets Rs5 crores

City Development Plan for Nagpur

Prioritization Workshop

Estimated project investments

(For individual level prioritization – Please fill and return this at the end of the workshop)

March 12, 2006



Nagpur Municipal Corporation

Project Prioritization by Mission Stakeholders

Stakeholders are requested to rank the sector and project sub components, keeping in view

- Sustainable capacity
- Citizen perceptions and
- Your own perception as citizens of Nagpur

Rank A: Necessary

Rank B: Desirable

Rank C: Least Priority

ILLUSTRATIVE EXAMPLE

		Total Investment Rs crs	Rank
Storm water drainage		250.00	
1	Drainage along side Road	50.00	В
2	Nallah canalization	50.00	A
2	Strengthening exisiting nallahs	50.00	С
3	Rejuvenation of Nag and Pilli rivers	50.00	A
4	Lake rejuvenation	50.00	A

Please return this page after you have marked your priority

Name:			
Organization:			
Telephone No.:			

		Plan Summary 2005-2011	
	Sector	Investment	
	ter supply and distribution	568	Priority assigned (A/B/
	Pench IV	400	
	Leak detection and Water Audit projects	28	
	Energy Audit Projects	25	
4	Strengthening of Water Supply System	115	
	verage	520	
	North zone	130	
	Central zone	240	
3	South zone	150	
Sto	rm water drainage	250	
	Drainage along side Road	50	
	Nallah canalization	50	
	Strengthening exisiting nallahs	50	
	Rejuvenation of Nag and Pilli rivers	50	
	Lake rejuvenation	50	
Sali	d Waste Management	50	
	Sanitary landfill	25	
	Bin free city	25	
Wa	ter recycling and reuse	250	
Slu	m Development / Housing	500	
1	Housing for LIG and EWS	175	
	Slum Rehabilitation	250	
3	Slum infrastructure improvement	75	
Roa	nds	1085	
1	Outer Ring Road	650	
2	Rail Over bridges within city limits	125	
	Flyovers	100	
	Bridges over rivers	10	
4		200	
N/F	TC and Tueff's Management	1550	
	TS and Traffic Management	1550 50	
	Traffic management		
-2	MRTS	1500	
	ial Amenities	15	
	Destitute Home (one)	1	
	Marriage Halls (ten)	5	
	Night Shelters (four)	4	
4	Public Toilets	5	
	Total	4 7 00	
	Grand Total	4788	

Please return this page after filling in

Specific suggestion/ comments on actions proposed	
Projects you have feel should be included in addition to those listed above	
Areas that you feel need further work and attention	
Other comments/ suggestions	

ANNEXURE J: OUTPUTS OF PRIORITIZATION WORKSHOP (12^{TH} MARCH 2006)

Summary of investment prioritisation as marked by stakeholders individually

	Capital Investment Plan Summ	ary 2005-2011	No. of responses with Rank A (ncessary)	No. of responses with Rank B (desirable)	No. of responses with Rank C (least priority)
	Sector	Investment in Rs crores			
•	Water supply and distribution	568			
1	Pench IV	400	33	7	5
2	Leak detection and Water Audit projects	28	18	12	13
3	Energy Audit Projects	25	14	15	16
4	Strengthening of Water Supply System	115	17	22	8
	Sewerage	520			
1	North zone	130	32	11	4
2	Central zone	240	17	19	11
3	South zone	150	23	13	12
	Storm water drainage	250			
1	Drainage along side Road	50	30	12	4
2	Nallah canalization	50	22	18	5
3	Strengthening exisiting nallahs	50	8	20	15
4	Rejuvenation of Nag and Pilli rivers	50	20	14	4
5	Lake rejuvenation	50	13	15	11
	Solid Waste Management	50			
1	Sanitary landfill	25	24	19	2
2	Bin free city	25	27	18	0
	Bin nee City	2.5	21	10	0
	Water recycling and reuse	250	19	7	1
	Slum Development / Housing	500			
1	Housing for LIG and EWS	175	24	15	9
2	Slum Rehabilitation	250	16	15	15
3	Slum infrastructure improvement	75	19	20	8
	Stum intrastructure improvement	13	1)	20	0
	Roads	1085			
1	Outer Ring Road	650	25	14	5
2	Rail Over bridges within city limits	125	31	9	4
3	Flyovers	100	13	20	12
4	Bridges over rivers	10	15	11	13
4	Road widening	200	21	10	7
Ш	MDTS and Troffic Management	1550			
1	MRTS and Traffic Management Traffic management	50	35	10	0
2	MRTS	1500	16	18	11
			-	-	
·	Social Amenities	15			
1	Destitute Home (one)	1	19	13	11
2	Marriage Halls (ten)	5	7	18	13
3	Night Shelters (four)	4	15	23	9
4	Public Toilets	5	40	1	4
	Total				
	Grand Total	4788			

Comments and suggestions given by stakeholders after the action prioritisation workshop (12th March, 2006) on the proposed actions and projects

1. Prashant Sarode, Nagvidarbha builders Association

Specific suggestion/ comments on actions proposed	 To reduce traffic problems on roads more than 2 ½ lanes, last lane should be reserved for parking. Front set back of commercial buildings should be converted into footpath & present footpath areas should be used to parking 	
Projects you have feel should be included in addition to those listed above	 Allied development of the CARCOL MIHAN project should be considered and they should be invited to participate. Special education zones in 3 tier system primary secondary higher education should be formed. SEZ should be formed to boost up the growth rate. 	
Areas that you feel need further work and attention	Designating kind use attesting present land use should be done by applying mind and town planning principle. Any subsequent interference should be avoided.	
Other comments/ suggestions	These should be secrecy about the proposed line of action regarding land use classification & development of newer projects implementation should be fast. Land acquisition prices should be rational. Public participation should be increased.	

2. Sandesh Ramteke, Elumenical Development centre of India (EDCI)

Specific suggestion/ comments on actions proposed	These actions or program should be implemented.
Projects you have feel should be included in addition to those listed above	Addition of convention centre in social Amenities.
Areas that you	Health Insurance

feel need further work and attention	Good forensic Lab Virology Lab
Other comments/ suggestions	Now electricity is becoming big problem how to solve it.

3. Vijay Davgan, Nag Vidharbha Builders Association

Specific suggestion/ comments on actions proposed	Outer Ring Road to be stated on priority basis.
Projects you have feel should be included in addition to those listed above	MIHAN Project is lagging behind for many years can change the scenario of Nagpur for overall development Good Infrastructure needed for the city.
Areas that you feel need further work and attention	Social Amenities.
Other comments/ suggestions	

5. P.S. Rajive, NMC

Specific suggestion/ comments on actions proposed	Reduction of UFW in Nagpur city with specific materialization in certain area which improves water supply to maintained consumer.
Projects you have	1. Permanent source of water
feel should be included in	2. Solid waste disposal in different category
addition to those	3. Removal of water line which are in under drain catchment / sewer

listed above	catchment
	4. Scab delay in move traffic area like vanity SQ panchsheal SQ
	5. Parking plaza at Itwari.
Areas that you	Specific attention to be given on
feel need further work and	1. 1900/572 layout after drainage sewer network.
attention	2. Sewer network disposed in Nallah should be removed
	3. RDB from warchia rd to Manish society.
	Improvement of water supply with equalizing all zonal requirements as per need.
Other comments/ suggestions	as per need. 2. British liquid sewer (lay brown sewer) needs to be straightened
	3. Public latrines should be minimized.

6. R.D. Jadhao, NMC

Specific suggestion/ comments on actions proposed	To raise citizen satisfaction - equitable water distribution Reduce distribution losses and UFW. Sourcing of water should split in three phase A Raw water pipeline B Treatment plants & ESR and distribution system.
Projects you have feel should be included in addition to those listed above	Solid waste management composing vermiculture.
Areas that you feel need further work and attention	Sourcing of water Used of method gas from SWTP
Other comments/ suggestions	Rejuvenation of Nag and pill river self purification of rivers

7. Azizurahman, NMC

Specific suggestion/ comments on actions proposed	In water supply work related to equitable distribution saving of water energy and lifting the satisfaction level shall be on top priority than augmentation. Segregation of waste should be provided for bin free city. Traffic conjunction places shall be identified Road dividers shall run through four square to square no cuts in between. Uni Directional traffic management shall be imposed
Projects you have feel should be included in addition to those listed above	Restrictions to Bicycle cycle rickshaws and hawker on thick traffic roads. Decentralised environment friendly system for composting the degradable segregated wok Promoting projects generating employment Public awareness companion on large scale through media like newspaper cable TV and special newsletter of NMC regarding protecting the utilities provided using it as personal paying violently for the utility.
Areas that you feel need further work and attention	Public Transport

8. V.S, Johari, NMC

Projects you have feel should be included in addition to those listed above	Parking plaza in / near commercial Areas RUB Missing links of DP
Areas that you feel need further work and attention	STP's + mother zone

9. Mahesh R. Gupta, SDE, NMC

Specific	The idea of MRTS to be explore with the PPP- A The about the
suggestion/	public transport system at with the help of MSRTC/NMC/PSP of
comments on	mini bus of busy traffic roads and bid buses as per the planning.

actions proposed	
Projects you have feel should be included in addition to those listed above	MSRTC/NMC and private sector participation. About 500 buses can improve the city urban transport system. This wills also further to
Other comments/ suggestions	The execution of the work and design of the road work is required to be performed on per IRC specification and requirement.
	The DP missing links should be The Bridges on Rivers also be

10. S.B.Jaiwal, NMC

Specific suggestion/ comments on actions proposed	Road widening improvement here we have think about the majority of roads which have been wide but still MSDCL's MSEB's system has become obstacle to traffic so instead widening more & more roads top priority has to be given remove these obstacles first while preparing proposal for widening of any new roads priority for shifting such obstacles should be done and that on realistic basis i.e. by keeping some percentage of roads widening more would do rather detailed estimate for removal of such obstacles will have to be prepared and provision for this expenditure will have to be made.
Other comments/ suggestions	As per NMC's Act it is the duty of such to remove obstacles on roads have high court has recently ordered to remove all the obstacles on carriage width/ foot path The poles other equipments which were not obstacle before widening of roads nor become obstacle so top priority in to given for removal of these obstacles as it would require nothing less than Rs 50 crores remove the obstacles in today situation more obstacles will be created when we will be widening more roads

11. Sunil N Pashirie, MSRTC

Specific suggestion/ comments on actions proposed	To reduce traffic congestion of Nagpur city roads It is necessary to loan of cycle Rixa finest. Make special lane to two wheelers auto vehicles Improve city houses connecting all part of city from one end make city less station at Rly stn, bus stn and another places of markets and hospitals
Projects you have feel should be included in addition to those listed above	For transportation plan of city operation all main and leig roads are included
Areas that you feel need further work and attention	On Eastern part of city widening of roads water supply to increased old drainage line should be changed
Other comments/ suggestions	Roads may be widening by traffic Engg way Bus bay and proper place of parking must be provided at widening road to avoid traffic congestion. Subway and footbridge must be essential.

12. R S Ghatole, MSRTC

*	Public transport system should be strengthened parking in the city should be improved competitions should be removed on top priority.
actions proposed	

13. G.G Khat, NMC Traffic Engg

Specific suggestion/ comments on actions proposed	OK
Projects you have feel should be included in addition to those listed above	Sufficient

Areas that you feel need further work and attention	Improvements to old city area first. Provision for city buses in the old city area i.e. Itwava Mahal etc.
Other comments/ suggestions	Traffic awareness to the vehicle holders @ vehicle speed, maintaining the road lanes vehicle parking and road crossing To make compulsion to vehicle holders the traffic rules.

14. VIJAY CHWRASIA, MSRTC

Specific suggestion/ comments on actions proposed	Public transport system be strengthen by improving the roads management especially in ATS/Rotary by lanes segregation.
Projects you have feel should be included in addition to those listed above	ROB and RUB at congested heavy traffic crossing taking variety cinema and prog
Areas that you feel need further work and attention	Removal of MT line and Elec Telephone pole coming within the main road and cleaning of road side drains constructed in IRDP prior to every rainy seasons.
Other comments/ suggestions	Erection of Transport Plaza for heavy vehicles at all four sides of the city

15. Kalapana Shinde, NMC

Specific suggestion/ comments on actions proposed	a. Job Opportunitiesb. EWS/ LIG colonyc. Economic Development
Projects you have feel should be included in addition to those listed above	For Economic Development Focus on self Employment/petty traders better jobs and job opportunities Shopping centers.

Areas that you feel need further work and attention	Economic Development
Other comments/ suggestions	Socio Eco Development

16. Sandhya Shrivastava, Shramic Panchyat

Specific suggestion/ comments on actions proposed	Notify the non-notified slum and develop them de-notify the abadi slum tax must be less what is the provision homeless marginalized Dormitories need to be create for workers and migrants Policy should be implement for low income notes groups.
Projects you have feel should be included in addition to those listed above	For home less reservations must be creation in EWS area Declared hawking zones and do declared with areas Rickshaw stand Thiyya stand and shed reservations Economic shops should provide to unemployment young generation.
Areas that you feel need further work and attention	Land for poor people Un organize sector workers need must be provide like license reservations of work place basic amenities should provide.

17. Ky Sudha, Nagpur Corporation

Specific suggestion/ comments on actions proposed	Rehabilitation must be done low rise buildings Housing colony can be established for people with assured income
Projects you have feel should be included in addition to those listed above	For getting employment of urban poor provide shopping center for SHH member Nagpur city
Areas that you feel need further work and attention	For economic development For shelter For income generating activities
Other comments/	Housing for SWS and LIG

suggestions	Will entail an investment of Rs 175 crores.

18. Sudhakar S Ramtake, EDCI

Specific suggestion/ comments on actions proposed	Slums should here basic necessities of life like accommodation sanitation road education.
Projects you have feel should be included in addition to those listed above	Quality of life needs to be improved
Areas that you feel need further work and attention	Electricity for future
Other comments/ suggestions	Implementation should be stated as early as possible.

21. Shobha Phanshkar, Vidaibha heritage society

Specific suggestion/ comments on actions proposed	 Governance has not been considered Penalties should be given for violations under ground transport has not been included for congestion areas Emergency medical services
Projects you have feel should be included in addition to those listed above	Projects which will enhance prestige / tourism outside JURM / NMC should be included major awareness campaigns needed Enhance pride in city.
Areas that you feel need further work and attention	 Better management of traffic One water meter for one flat scheme is not enough Payment properly tax should be made easily by opened more collections canters in different wards / zones
Other comments/ suggestions	Sports authority of India to be set in city to transportation the woman hockey association ground at tiger gap can be used (4.4 a)

Public grievance cell to be established and made accountable
Public to participate in implementation of projects

22. S.S Bhuta, NMC

Projects you have feel should be included in addition to those listed above	Developing of land sites area Within bodies to given in development of play grounds et
Areas that you feel need further work and attention	Developing the area under meter require by NIT NMC planning should be indulged

23. S. S. Gaikwad, NMC Water Works

Specific suggestion/ comments on actions proposed	Before implementation of any action a legal advisory committee i.e. constituted which will submit its report of judiciary and obtain their objection.
Projects you have feel should be included in addition to those listed above	Central part of Nagpur of very congested. No road widening and providing improved infrastructural facilities is possible as per present DC rules. So separate rules be framed to promote house owners to go vertically or shifting them to other parts of the city or peripheral part of the city
Areas that you feel need further work and attention	Slow and high speed lanes be segregated
Other comments/ suggestions	No employee should have his work place more than 5 kms from his house. Further all facilities be created within a radius of 2 km, so that cycle traffic can be promoted which will reduce environmental pollution and fuel consumption.

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24. Ajay D Ramtake, NMC

Specific suggestion/ comments on actions proposed	The execution of the proposed plans should be provided from political interference
Projects you have feel should be included in addition to those listed above	The field of primary & secondary Education is not taken care of which though not directly but indirectly concerned with the future development of area
Areas that you feel need further work and attention	In the field of water usage sanitation while developing the infrastructure the campaign for educating the users citizens is necessary for that some planning is necessary.

25. Sanjay D Katyarmal, NMC

Specific suggestion/ comments on actions proposed	Outer ring road to be change in priority Traffic management training project must be taken on top most priority
Projects you have feel should be included in addition	Establishment of
to those listed above	1 Disaster management centers
	2 Training for local Residents regarding environment through public participation & in association with the NMC/NIT
	3 Citizen Health care centers must be developed
Other comments/ suggestions	1 Waste tariff shall be proportional to usage of water
	2 Property taxes for residential use shall be hiked
	3 Transport means must be strengthen to minimize traffic congestion

30.

Specific suggestion/ comments on actions proposed	Basic amenities provided to all slum dwellers Tenure rights will be given to all slum dwellers except those who are living besides the rivers, railway line etc
Projects you have feel should be included in addition to those listed above	Allotment of tenure rights on nominal rates only Water, Road, Electricity, Sanitation are provided to slum dwellers
Areas that you feel need further work and attention	Health sectors regarding the urban poor will be taken in consideration Awareness of maintenance of services provided by local authorities Providing space for hawkers for earning as well as providing accessible service to citizens. Some education programmes are made for all citizens. How they behave like an ideal citizen. There should be provision of penalties on violation of such rules of civilized citizenship rules

31. Leena Suhas Buddhe

Specific suggestion/ comments on actions proposed	Comments on Dormitories – Care should be taken to vacate the dormitories once the work is done. Authority should chalk out a proper mechanism to operate and maintain these dormitories. It should be on the pay and use basis.
Projects you have feel should be included in addition to those listed above	Reforms in GR on photopass and tenure rights and on denotification of slums
Areas that you feel need further work and attention	Tenure Rights & Awareness about schemes & Peoples Participation
Other comments/ suggestions	Conduct fresh surveys and based on these surveys the programmes should be chalked out. Peoples opinions and suggestions should be incorporated right from the planning stage

34. Smita Bhabra, Global Scientific INC

Specific suggestion/ comments on actions proposed	This is a very good initiative people from multidisciplinary sub are coming to a same platform for one to one interaction Technical survey for all the aspects of development should be given importance & based should be given importance & based on results strict action implementation planned
Projects you have feel should be included in addition to those listed above	Monitoring agency for all the development projects environment should be given importance as it is directly related to all the parameters of development
Areas that you feel need further work and attention	Formulation of policies & norms Awareness increase in relation to CDP strategies planned with local with local citizens
Other comments/ suggestions	Maintenance of planned infrastructure in future should be given importance and should be included in time bound prog schedule (written agreement) Public participation should be involved.

35. Pradeep P Ramteke, Shahar Vikas Manch

Specific suggestion/ comments on actions proposed	Those who are studying in slum area more than forty years give them and take money from them.
Projects you have feel should be included in addition to those listed above	Electricity and proper water supply in every parts of the city Every slum dweller should have water meter on minimum charge
Areas that you feel need further work and attention	North Nagpur and while Nagpur came under the further project
Other comments/ suggestions	Every citizen must be pay regular tax whatever he is poor or rich slum and colonies person should have water meter they must pay for water minimum charges or poor people vidharbas electricity ought house in Vidharbas

36. S.A Rode, MJP

Specific suggestion/ comments on actions proposed	As 2/3 Sewerage disposed off untreated savage treatment plants necessary 3 or 4 sewage treatment plant as per topography of Nagpur with proper network sewage collection system Two tap system shall be introduced atleast to the newly developed area as a startup efforts from existing STP
Projects you have feel should be included in addition to those listed above	Water supply shed have priority above all projects Rahari Baggage as part of self supporting effort of NMC shd be taken in hand on priority
Areas that you feel need further work and attention	Rehabilitation of STP water for non potable purpose should be priority which will be useful for generating funds
Other comments/ suggestions	Power generation (conventional & unconventional) Projects shall be encouraged small industrial developments and trading activities shall be encouraged in the city

38. Dinesh B Yeole, Akhil Bharitya Parisahad

Specific suggestion/ comments on actions proposed	Ring road are most essential for the future locking of accidents because so many people die every yr in accident so that is the priority of road widening & breakers 7 sincrosing the signals Hawkers zones & auto Rikshaw parking as well as auto run by meter & Bus services are improved in the future because our population is increasing day to day so may new vehicles are registered
Areas that you feel need further work and attention	
Other comments/ suggestions	That type at problems for the purpose at good & safety Nagpur for accidents & other good norms So other is a good to the big city planning & my city is beautiful?

39. S.S Doifode Institutions of Nagpur Engineers

Specific suggestion/ comments on actions proposed	Water supply and slum development should be done or priority
Projects you have feel should be included in addition to those listed above	Road side arboriculture and tree plantation should also be included
Areas that you feel need further work and attention	New water supply project Rahari Project must be done on priority

40. Deepak Gupta

Specific suggestion/ comments on actions proposed	We agree by action profound
Projects you have feel should be included in addition to those listed above	1 Addition of convention center 2 In Govt Offices and other premises area plantation should be done 3 Solar street lights to lightened the city
Areas that you feel need further work and attention	1 Health insurance 2 free coaching class in NMC school for poor children 3 Extra classes for Eng and maths should be taken by specialized teacher in corporation school
Other comments/ suggestions	1) Introduce moral science in primary school. 2) Pollution control (environment care) should by our moral duty 3 Military school for girls should open in Nagpur

41. Pravin Zoad, MJP Nagpur Jeevan Pradikaran

Specific suggestion/ comments on actions proposed	1. Projects and scheme should be studied through experts and proper planning and design shall be performed
	2. Time bound programme and scheduling of projects shall be carried out
	3. Allocation of funds shall be done decoding to importance and of the scheme
Projects you have	1. Plantation along the roadside allover the city
feel should be included in addition to those listed above	2. Solar lights arrangements for all the street light public halls etc shall be incorporated
	3. Roof top water harvesting should be made compulsory for new flat scheme and houses deal line along roadside should have to percolate water so as to increase the water table
Areas that you feel need further	1 Training, discussions, seminars, workshops to all related persons who are connected with city development process
work and attention	2 Awareness / education through news paper media etc should be done

42. Mrs Sujata D Kadu, NMC

Specific suggestion/ comments on actions proposed	Top priority to rapid roof top rain water harvesting awareness in public awareness about the purpose in implementation of DP Make implementation DP sites more easy
Projects you have feel should be included in addition to those listed above	1 Heritage culture and tourism. Conservation of heritage buildings and 2. Providing infrastructure in Nagpur boosting tourism in the periphery of Nagpur / Nagpur dist
Areas that you feel need further work and attention	Outer ring road Reserved sites of public amenities in the areas which are regularized Under the guntewari act
Other comments/	of funds under separate budgetary head should be made exclusively for

suggestions implementation of development plan sites

43. V.M. Kinhikar, Retired Director

Specific suggestion/ comments on actions proposed	Nagpur city and its surrounding area metro region be mapped and city survey sheets as accurate as possible through modern techniques such as aerial survey/Remote sensor be prepared on top priority mapping to hold have one meter All city survey is streets be updated regularly 2) Data bank regarding NIT NMC land including leased out built up in vacant land be prepared 3) This also applicable State Govt, Govt. of India Institutions organization including land under universities 4) lands under cities religious bodies including churches, temples, mosque, gurudwara, 5) Lands under water bodies, nallah educational institutions, schools, colleges, 6) Land under sports, YCA, Yashwant stadium, all stadiums, playgrounds, open spaces and gardens. 7) Land under railways (including leased) bus stations, airport, truck terminus, land under Model mills, Empress mills be admeasured and noted 9) Land under APMC, major wholesale market including grain, cloth kirana, fruit and vegetable merchants 10) Land under hilly areas
Projects you have feel should be included in addition to those listed above	1) Road connecting Amravati Road and Matsusa 2) Markets including vegetable, fruit markets to be developed by NITs. NMCs land at Gokalpeth situated and also 3) Slaughter houses and mutton markets 4) DP sanctioned by the Govt. should be strictly implemented by NMC whenever necessary private or through PPP.
Areas that you feel need further work and attention	1) Scrapping of Gumthewani Act 2) Scrapping of ULC Act 3) Slum Rehabilitation Act be very cautiously implemented 4) State Govt. lands be developed on PPP basis 5) Vidarbha Region should be given the statehood and that no policies are thrust upon and the Nagpur city enjoys the real capital of the state and not the 2 nd capital.
Other comments/ suggestions	NIT to work only in Metro Region on the lines of Ahmedabad Urban Development Authority (AUDA) NIT should transfer all its assets & liabilities within Municipal Council Limit. Every important Dept. of NMC be upgraded including Engineering, Town Planning, Water Supply, finance with high-ranking official with their parent depts supporting staff

44. Sunil Sudhakar toye, Indian Institute of Architecture

Specific suggestion/ comments on actions proposed	Heavy expenditure proportions not feasible in near future for e.g. MRTS instead the same fund could be diverted to other areas
Projects you have feel should be included in addition to those listed above	
Areas that you feel need further work and attention	Study of existing land one and awaiting mixed land use plans
Other comments/ suggestions	Short listing of groups should be done immediately no further admission to be adjourned to have continuity

45. Abhay S Gjabhiye, Health Services

	ierraning a Symmy of remain activities	
Projects you have feel should be included in addition to those listed above	Addition of convention center & social amenities	
Areas that you feel need further work and attention	Health insurance Virology lab Good Forensic Laboratory	

46. Kishore Taori, Indian Medical Association

Specific suggestion/comments on actions proposed We agree to the actions proposed

Projects you have feel should be included in addition to those listed above	Convention center for the city is must which will truly make it hub
Areas that you feel need further work and attention	Health Insurances public awareness about various diseases
Other comments/ suggestions	Good forensic lab is necessary in the city

47. Dr Shree Hari Chava, Accountants

Specific suggestion/ comments on actions proposed	A good lead
Projects you have feel should be included in addition to those listed above	Trade malls & Shopping Complexes
Areas that you feel need further work and attention	Consolidation of the inputs of the IRDP

48. Vinayak S Deshpande, PGTD in Eco of Nagpur University

Specific suggestion/ comments on actions proposed	
Projects you have feel should be included in addition to those listed above	Focus should be on job creation Quality of job is also equally important
Areas that you feel	Nagpur city development needs to be considered in the overall frame

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need further work and attention	work of economic development of region priority should be on suitable development
Other comments/ suggestions	Workshop should be conducted section wise education institution Industrial works enterprises Agriculture etc.

49. S.Y. Raut NMC

Specific suggestion/ comments on actions proposed	I agree with action propose
Projects you have feel should be included in addition to those listed above	Addition of convention center
Areas that you feel need further work and attention	Health Insurance
Other comments/ suggestions	IT PARK
	Introduce pry education within scientific method

50. S.J Gohokar, NMC

Specific suggestion/ comments on actions proposed	We agree to action proposal
Projects you have feel should be included in addition to those listed above	Convention center for the city is most which will fully make it

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Areas that you feel need further work and attention	Health insurance public awareness about various disease
Other comments/ suggestions	Good forensic lab is necessary in the city

51. R.V Warke, NMC

Specific suggestion/ comments on actions proposed	We agree with section proposed
Projects you have feel should be included in addition to those listed above	Conventional center in social Amenities he included
Areas that you feel need further work and attention	Additional Health Insurance
Other comments/ suggestions	Good forensic Lab such as viralory lab

VI. PRESENTATION F

Presentations made by the stakeholders' groups during prioritisation workshop on 12th March 2006



Health and Education

City Development Plan Prioritization Workshop

Presentation by Dr.Kishore Taori, President Indian Medical Association, Nagpur



PRIORITY A: Eradication of Preventable diseases by 2011

- Supply of good quality drinking water
- 100 % underground sewerage system
- Effective disposal of solid waste and biomedical waste
- Health Insurance
- Health tax by NMC
- Total vaccination of the population as per WHO schedule

PRIORITY B: Convention Centre



- Takes care of updates, technical expositions and Industrial fairs
- Right kind of milieu for educational activities
- Encompasses all spheres

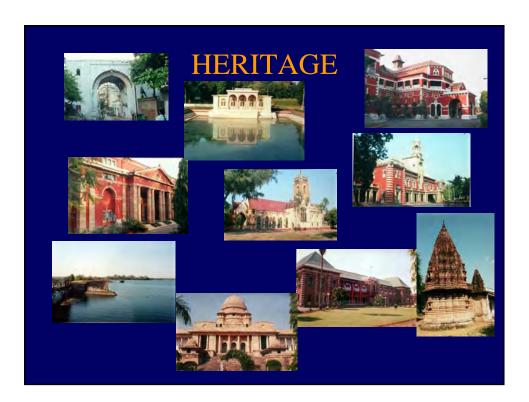


PRIORITY C: Primary Health and Education by NMC

- Health awareness activity centres in each zone (e.g. HIV / AIDS, family planning)
- Public Private Partnership
- Facilities like free land and tax concessions for multispeciality medical centres



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HERITAGE ACTION PLAN

- Prepare Conservation Plan for the city
- Involve the stakeholders
- Conservation Policy
- Select Pilot projects and implement them
- Prepare a Conservation Plan for Nag River Basin
- Rejuvenate the city centre pedestrianise and provide open spaces

CULTURE ACTION PLAN

- City Museum Nagpur specific, Gonds to present
- Tribal Museum As Nagpur is in the centre of the Tribal belt
- · Archeological Museum- Already in the pipeline
- Zoo already planned

Infrastructure Required

- Auditoriums
- Sports facilities and training (as opposed to stadii)
- Convention centre, Amphitheatre, exhibition grounds already planned by NIT
- Nagpur Haat

PILOT PROJECTS - I



• British Residency:

The British Residency, the zero mile stone, and the Sitabuldi Fort form a triangle. Owned by the State Government it is ideally located to be a Tourist Centre as it is walking distance from the railway station and the bus station. It can house the MTDC office, a Nagpur Photo Exhibit and Tourist Information Centre, Youth Hostel, Tour Operations and also hold a sound and light show on the Battle of Sitabuldi.

- Zero Mile Stone
- Sitabuldi Fort: Fort be made accessible to visitors on a more frequent basis. One of the rooms of the Fort could be used as an exhibit room to display photos, lithographs, documents etc.

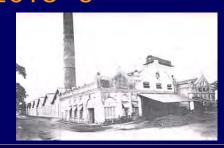
Projects -2



Kasturchand Park: Rejuvenate Kasturchand Park and make it attractive to the citizens. Make it inclusive. Provide walking paths, benches, floodlighting, revive band stand activity.

PROJECTS -3

- Mahal Road: Nagpur Festival
- Raj Bhavan: Open to public, colonial exhibit, garden for walkers, yoga and bird watching



Empress Mills 1,2,3

- •Industrial museum and exhibit
- Shopping Malls inside Mill buildings
- •Other architecturally harmonious activities eg Haat, open air theatre, gardens, exhibition halls and ground

Hospitality

- · Govt. accommodation at railway stations/bus stations
- Setting up of Youth Hostels
- Bed & Breakfast MTDC
- Heritage Hotels Identify and list
- International students exchange program

ACTION PLAN

Reservations for hotels and hostels in Development Plan

Identification of suitable heritage hotels

Land Use & Development

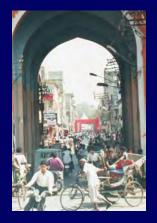
ACTION PLAN

- Reserve land within each sector for:
- •Recreational activities, open spaces, playgrounds, sports training facilities(as opposed to stadiums), traditional open markets, hotels, hospitals, etc.
- •Land use planning should have a third dimension FSI and Building heights
- As per heritage precinct, architectural /urban character building controls should be imposed



TOURISM ACTION PLAN

- •Set up an official internet site of the NMC which will market Nagpur
- •Implement the Heritage Conservation Plan
- •Nagpur Festival Festivals simultaneously all around the city
- Provide Infastructure
- Heritage Tours
- Training of tour guides



JNNURM Project



Mahal Conservation Area

Use inputs from all sectors for Mahal as the test case.

Heritage conservation, clean transport, infrastructure, clean water, Nagpur Festival etc



Priority A

- Inner city/ core areas revitalization
 - Identify land in the peripheral areas and provide connectivity and other infrastructure
 - Decongesting the core areas through selective relocation of commercial and trading activities
 - Building Regulation policies to be framed to encourage decongestion of the core areas through building norms, FSI norms & incentives, parking norms
- Discourage development in critical, ecologically sensitive areas
 - Critical locations with respect to environmental sensitivity need to be identified and demarcated by the town-planning department.
 - Private land owners within large masses of green spaces within the municipal limits like PKV, NEERI, VNIT etc. must be involved in the planning process
 - Special DCR need to be made applicable to these areas to restrict any encroachments and unauthorized developments.

Priority B

- Develop CBDs in other parts of city
 - The assessment with respect to the current land use indicates that there is still scope for commercial activity. This however shall be dispersed and more business districts should be developed which will decongest and reduce load on the core city areas.
- Peripheral areas' (metropolitan regions) development needs focus and integration with transportation networks through coordinated efforts from NMC and NIT
 - The potential development areas in the peripheral areas need to be linked through an efficient arterial structure within /outside the city. These would provide alternatives to these areas bypassing the core of the city resulting in decongesting the core. The arterial structure is proposed in such a way that it will take care of future vehicular growth. Thus NMC shall undertake an exercise to widen these roads and connect the missing links.
 - Provision of adequate land for transportation corridors, transportation hubs and network to provide safe efficient and affordable mobility.

Priority C

- Compatibility of land uses
 - Educational institutions/ work places and residential areas being located in opposite directions generate traffic demand, which could otherwise be avoided if land use was compatible. The DP, which is due in 2007 needs to address this issue as availability of land is not a constraint.
 - In selected areas, where the carrying capacity still exists, the concept of paid FSI must be explored. The contractor must be given extra FSI with extra payment.
 - Carry out study to identify corridors where densification is possible. NMC
 must calculate the carrying capacity of various areas on the basis of certain
 indicators, for example the water source, eco-sensitivity, cultural or heritage
 significance etc.
- Facilitate housing for slum population and transit shelters for the EWS/ LIG migrant population
 - Encourage builders, developers to develop mass housing under incentives.
 These aspects will need to be taken into account in the new Development Plan to be prepared.



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Local Economic Development

Nagpur City Development Plan Prioritization Workshop March 12, 2006



Mission Statement

Nagpur should be a city having vibrant economy with environment opportunities and infrastructure to support high standards and good quality of life



Key Observations

- Maximum respondents belong to 25-44 age group more than 50%; and their reactions need to be analyzed in a focused manner separately
- One of the reasons for leaving the city is better jobs (88%) and not lack of jobs - higher remunerative jobs should be the focus
- Multiple agencies are involved in economic development
 - Eco Devt has to be synchronized with the development of the region and the State
 - NMC's role in bringing economic development is minimum being a local body
 - Administrative reforms and proper co ordination of various agencies concerned with economic development



Clean and green industries

IT Sector

Readymade garments and textilesB

Food and agro-processingC

Power supply should be improved to develop these industries



Service sector

- Warehouses and cold storage A
- Transportation and logistics hub A
- International convention centre B
- Business and trade parks B
- Multiplexes, casinos, pubs for improvement of night life – B
- Non IT related industrial service like air cargo operations, brokers, indenting and buying agencies, C & F agents, container services, packers and movers, haulage services, hospital management, news and media service - C



Service Sector contd...

- Providing garbage and solid waste at one point for entrepreneurs in vermiculture, bio fertilizers and non conventional energy projects - A
- Zone wise strengthening of the network of 34 types of service societies of educated unemployed youth registers with employment exchange - A
- Consolidation of IRDP outputs for value addition A

THANK YOU

3rd Stakeholders' Workshop

On JNNURM for NAGPUR

VANAMATI, Nagpur On 12th March 2006

Presentation by

Group V

on

Urban Environment, Gardens & Lakes

VISION

An 'Autonomous City', that would facilitate the highest 'Quality of Life' possible. Such a city would be amongst the most liveable in the country. This would be possible if the principles of 'Sustainability' are adopted as benchmarks for policy-making.

An Autonomous City would be one that would be, as far as possible, self sufficient in so far as meeting its basic needs like water, energy and food.

A 'Liveable City' would be one that would score high on parameters such as peace & harmony amongst communities, Urban Air Quality, safe and sufficient water, safe roads, efficient public transport, quality education, quality health services, employment opportunities, affordable housing, recreation facilities, cultural development, conservation of heritage and preservation of bio-diversity.

A 'Sustainable City' would be one that would meet the above present needs without compromising the ability of the future generations to meet their own needs.

The UN-HABITAT in its document on 'Sustainable City Programme' (SCP) states that:

- Sustainable Cities are fundamental to social and economic development; they are engines of growth
- Environmental degradation adversely affects economic efficiency and social equity, and hence obstructs the development contribution of cities
- Environmental degradation is not inevitable; what is required is a pro-active management approach built on an understanding of the complex interactions between development and environment.

Thus, development initiatives under all the sectors identified for JNNURM, namely, Slums & Urban Poor; Roads, Traffic & Transportation; Water Supply; Sewerage; Solid Waste Management; Storm Water Drainage; Development Planning; Urban Governance and Culture, Heritage & Tourism are bound to have an impact on the Urban Environment.

This presentation aims to set priorities for development initiatives vis-a-vis the above sectors with the objective of ensuring that principles of sustainability are adhered to.

I Land Use Planning & Housing

Priority 1: Nagpur Region Peripheral Plan:

An area of 3720 Sq. Km. is covered under the Plan of which phase I covers 1520 Sq. Km. in a 12 Km. wide girdle around Nagpur City. The area of the Plan covers 60% of Nagpur District. The enormity of this Plan and its impact on the city becomes clear when compared with the area of the city, which is presently only 235 Sq.Km. within Municipal Limits.

The State Govt. has designated NIT as the Planning Authority for this Plan. Of the Plan, an area of 875 Ha. (less than 1 Sq. Km.), by the name 'Besa Beltarodi Improvement Scheme South – 1', has been outsourced for planning to a Hyderabad based consultant and a plan, formulation of which has not undergone any of the public participation processes, (as in JNNURM), is put before the public. The last day for receiving suggestions/objections is 1st April 2006.

I: Land Use Planning & Housing Priority 1: Nagpur Region Peripheral Plan



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City Line

MARCHION, SURL

'We were not consulted on **Metro Region Development'**

Besa Sarpanch

accuses admn

of neglecting

sulted and are being neglected by the administration, while implemeating the Metro Region Development plan, claimed Ramraj Khadse. residents in the

Sarpanch, Gat Gram Ponchayat planning process Besa (Bel'farodi). He was addressing a press conference held on Saturday in which he disclosed that as per the governments order the Gram Panchayat have a separate iden-tity and also have sway over their jurisdiction.

WE who know every thing about our area were never consulted and are

Panchayat were never involved in the process nor were consulted by the administra-tion. There are a lot of problems in Besa which we know in and out. We should have

been consulted before announcing the project We unfortunately came to know of the same through news paper reports he further claimed. The press conference was also attended by Aziz Khan Pathan, and Natthu Laxanc of Besa.

Sector I: Land Use Planning & Housing

ACTION

The 74th Amendment to the Constitution of India stipulates formation of District Planning Committees (DPCs), Metropolitan Planning Committees (MPCs), Local Self-Govt. Planning Bodies and Ward Committees. In the DPCs and MPCs it is provided that elected representatives of all towns and villages will be represented.

This planning is being carried out by the NIT in a piecemeal manner and in contravention of the above stipulations. This approach cannot address planning issues of any of the above sectors, let alone holistic issues pertaining to Urban Environment. Development in these peripheral areas is bound to impact the City's development. The City's future options are thereby being closed.

IF THE FORMATION OF THE ABOVE PLANNING COMMITTEES IS NOT ADDRESSED AT THIS STAGE OF JNNURM, POSITIVE GAINS OUT OF THE CDP EXERCISE WOULD BE NEGATED.

Priority 2: Land use Planning at City Level:

The Development Plan (DP) of Nagpur will come up for revision in five years' time (2011).

ACTION

Demarcate Heritage Zones & Precincts & prepare guidelines: HERITAGE PRECINCTS:

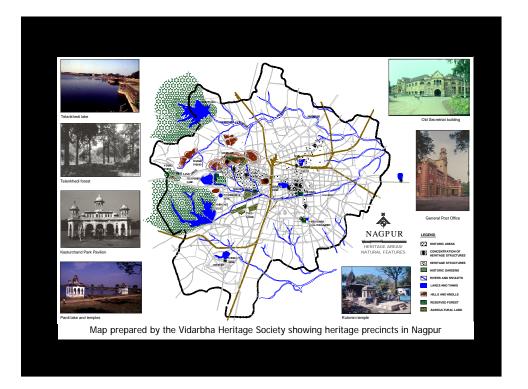
- Nag River Basin
- Pili River Basin
- **Ambazari**
- Gorewada
- Sitabuldi Fort
- Jumma Talao
- Sakkardara
- Telangkhedi
- Sonegaon
- Pardi (Baradari)
- Pandharabodi

- Naik / Lendi / Dob Talao
- **Seminary Hills**
- Ramnagar / LIT Hillock Mahal Road
- Gond Killa
- **Old Secretariat Compound**
- Kasturchand Park
- **PKV** Lands

HERITAGE ZONES:

- Mahal
- Civil Lines

'Conservation Plan of Nagpur' by the Vidarbha Heritage Society under the aegis of the Tercentenary Committee

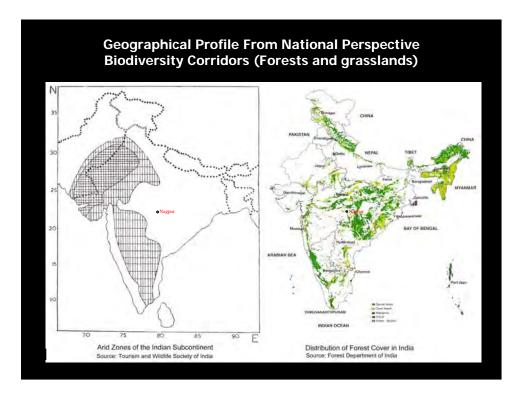


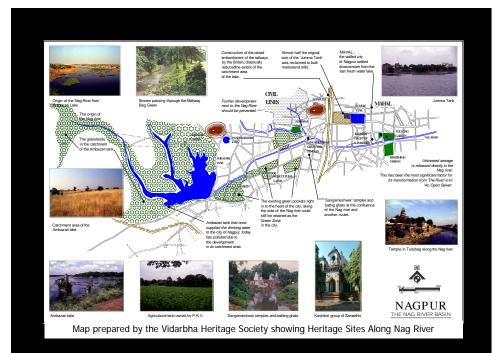
Priority 3: Biodiversity Corridor / Urban Forestry:

The Natural Biodiversity Corridors within the City run along the streams of Nag, Pili and Pohra Rivers; along Hill Chains like Hazari Pahad, Starky Point Hillock, Seminary Hills, Sitabuldi Hill, LIT/Ramnagar Hills which are an extension of the Mahadagarh Hills of the Satpura Ranges. Urban Forests in Nagpur are located along catchments of lakes along western periphery of the City. Growth of the City should not result into breaking of the natural biodiversity corridors which extend beyond the city.

ACTION

Sections of the corridor that are not presently reserved, and due to which the corridors are broken at places, should now be reserved. This will facilitate transfer of gene pool & maintenance of ecosystems (full range of Flora and Fauna). Stewardship of Urban Forests not only adds aesthetic value and wildlife habitat to the City, it also enhances the ability to absorb air pollutants, including particulate matter, ground level ozone and CO2. The responsibility of reservation of biodiversity corridors at regional level will be of the MPCs and at City level with the NMC.





Priority 4: Reservation for Hospitals Sites:

The large number of small hospitals scattered all over the city, predominantly in densely populated residential areas constitute a health hazard.

ACTION

Earmark sites in the DP for larger hospitals, which on account of their scale of operation and management will provide better health care. This would also prevent mushrooming of small hospitals in residential areas.

Priority 5: Pedestrianization of commercial areas:

Vehicular traffic through existing commercial areas is one of the main causes for traffic congestion / bottlenecks.

ACTION

Commercial areas such as Sitabuldi, Dharampeth, Sadar, Mahal, Itwari should have areas reserved for 'only pedestrian' and 'non-motorised' transport. Motorised access to commercial areas should be permitted only up to their periphery with provision of parking areas. This will make shopping a truly pleasurable experience and a safe one at that.

Priority 6: Develop Land Use Plans that Accommodate Lifestyle and Business Opportunities:

Central Business Districts (CBDs):
 These are catalysts for commercial growth and cultural opportunities.

Reservations for CBD sites across the city should be made. These reservations should include offices, pedestrian malls, shopping areas, theatres, exhibition halls and spaces, convention centres, art galleries, restaurants, public plazas and landscaping. In addition to making reservations, Urban Design principles should be applied for designing CBD areas.

Informal business activities:
 Hawking is a legitimate business activity, a need and indeed a part of our culture.

ACTION

Hawking occurs where people congregate and where people shop. 'Hawking Zones' that are not contextual do not succeed. Therefore, spaces should be reserved / designed for hawking where people congregate / shop.

I: Land Use Planning & Housing

Priority 7: Greenways in existing and new areas:

Greenways are paths designed for pedestrians and cyclists that enhance the walking and riding experience and provide different ways to move at neighbourhood and city level. The Draft National Urban Transport Policy (NUTP) states that "A separate fund would be created to support the construction of cycle tracks and pedestrian paths in all million-plus cities by way of 50% of the costs being financed by the Central Govt. As a first step, the construction of 50 Kms of cycle tracks in all million-plus cities and 100 Kms of such tracks in three million-plus cities would be supported."

ACTION

Existing roads, open spaces, proposed roads and biodiversity corridors should be designed to accommodate greenways. Appropriate reservations and regulations should be made in the DP. The offer of the Central Government for assistance should be availed.

Priority 8: Maharashtra Gunthewari Developments (Regularisation, Upgradation and Control) Act, 2001:

This Act came into force in the same year that the DP of Nagpur was sanctioned. Implementing Authority for the Act is NIT. The NIT has formed a 'Deletions Committee' to recommend deletions reservations. About 50% of the reservations in the DP have been deleted so far. The number of deletions in Nagpur on account of implementation of this Act is the maximum in Maharashtra. As a result of this, the DP which is in force upto 2011 has been reduced to a mere "coloured poster". The extent of adverse effect of this on the urban environment would be significant. The continuation of this situation has serious consequences for the CDP process in progress under JNNURM.

ACTION

In light of the Nagpur experience, the areas of conflict between the 'Gunthewari Act 2001' and the provisions of 'MRTP Act 1966' should be reviewed so that all the loopholes being used to delete the reservations are plugged. The extent of adverse effect of this on the environment needs to be studied.

I: Land Use Planning & Housing

Priority 9: Housing: Efficient use of land

Land is a non-renewable resource. Plotted residential development creates marginal spaces around the houses that have limited use but at the same time consume about 2/3rd plot area. These marginal spaces are neither good enough for planting trees nor for parking.

ACTION

The Development Control Rules (DCR) should be revised to encourage row houses / courtyard houses with common-wall construction. This will result in low-rise high-density housing as envisaged by the Planning Commission. The plots should be preferably arranged around a cul-de-sac.

Priority 10: Housing

Eco-efficiency principles for new buildings and housing:

Efficient use of energy is no longer a matter of choice. Buildings will have to adhere to standard rating for resource and energy consumption. Some standards have been established in the Western World (LEED- Leadership in Energy and Environmental Design) – an industry standard for designing and constructing 'Green Buildings' and elements.

ACTION

Evolve, adopt and enforce standards for Green Buildings relevant to our context. These standards should become a part of the Development Control Regulations.

I: Land Use Planning & Housing

Priority 11: Mixed-Use Neighbourhood Planning

Segregation of community facilities and other amenities such as goods and services, commercial and recreational, child-care facilities from residential areas is unsustainable. Traditionally mixed-use has been the norm because it is much more efficient and sustainable. Mixed-use allows:

- Better use of infrastructure
- Safer neighbourhood (even in the night)
- More opportunities for better architecture and urban design
- Better access to goods and services within walking distance

ACTION

Identify areas in existing development where mixed-use planning can be implemented. Necessary changes in the DCR can be made for such areas as well as for new development.

TT

Slums & Urban Poor

Priority 1: 40% of the City's population lives in slums

- Slums come up in areas where land is of low market value or is free (up for grabs). Therefore availability of free lands is an essential feature of slums. Such 'free' lands are usually the hillsides, lake beds/catchments, reserved open spaces, flood-prone river banks and such other environmentally sensitive areas.
- The presence of 8 lakh population of the City in slums therefore has a significant impact on the urban environment. In addition to unplanned occupation of environmentally sensitive areas, slums are characterised by poor infrastructure and waste-management systems which degrade the area.

ACTION

A site specific approach is needed to demarcate those areas where no development (slums or any other) can be permitted. If slums exist on some of these eco-sensitive areas, they should be shifted. In other slums, patta rights, plot-reconstitution, infrastructure, amenities, etc. & such case specific measures should be taken up.

II: Slums & Urban Poor

Priority 2: SRA is in the offing for up-grading slums:

- People living in slums provide several essential services which are cheap. Almost all of slum-dwellers are initially migrants who cannot afford to pay for land when putting up their first shelters. After a while their lot is better but then they are reluctant to leave the free land. The City never provides / allocates land in the planning process for such migrant families for a transit period.
- The SRA approach would result, in the long run, in permanent damage to the environment. It would also create high-rise highdensity low grade development, which will:
 - a) be a non-reversible development likely to cause permanent damage to eco-sensitive areas
 - b) be prone to degeneration into a slum due to the low-grade development and poor maintenance. Such a situation will worsen into a 'Mumbai Chawl' like catastrophic situation.
 - c) All that the SRA will achieve is replace the unsightly look of present-day shanty-towns with concrete structures that will initially create an impression that things are in order.

II: Slums & Urban Poor

ACTION

Ensure that a portion of the housing stock serves lower-income needs by making provision for lease of city-owned land for nonmarket housing.

This should be evenly spread over the city and preferably be a part of the suggested mixed-use neighbourhood planning. Such a development should be low-rise high-density.

During slum relocation and up-gradation programmes, transit accommodation in semi-permanent shelters should be made available. Land should be made available for such camps.

Long-term case specific critical assessment of each proposal under SRA is necessary to prevent environmental degradation and catastrophes in the future. Necessary amendments / guidelines should be incorporated into the SRA proposals to achieve the above model of development.

$\Pi\Pi$

Transportatation

Priority 1: Urban Transport Policy

The prime objective of an urban transport policy is to ensure easily accessible, safe, quick, comfortable, reliable and sustainable mobility for all. To achieve this, a four-pronged approach will have to be adopted:

- reduce the existing levels of congestion.
- reduce the impact of motor vehicles on air pollution
- improve road safety, and
- foster the use of sustainable technologies that minimise the consumption of imported fuels in urban transport and thus preserve the country's energy security.

Source: Draft National Urban Transport Policy (NUTP)

ACTION

Prepare a Urban Transport Policy for Nagpur City in line with the Draft National Urban Transport Policy (NUTP). Without such a policy in place, it will be a mistake, and a costly one at that, to go ahead with projects.

III: Transportation

Priority 2: Public versus Personal Transport:

Type of Vehicle	Av. Pass/	Pollution	Congestion
	vehicle	in gm/	effect in
		pass-km	PCU*/pass
2 stroke 2 wheeler petrol engine	2	7.13	0.375
4 stroke 2 wheeler petrol engine	2	4.76	0.375
Car (catalytic converter petrol eng)	4	0.93	0.25
Bus with Diesel Engine	40	1.00	0.075

*PCU = Passenger Car Unit where 1 car = 1PCU, 1bus = 2.5 PCU, 1 scooter = 0.75 PCU etc.

This table shows that though cars and buses have about the same pollution effects on a per passenger basis, buses have the advantage of occupying far less road space. On the other, two wheelers not only have a far more damaging effect on the environment than cars and buses, but are also undesirable from a congestion point of view. With 84% of Nagpur's vehicular population as 2 wheelers, this is a serious area of concern. Hence among the above modes of transport, buses are clearly the most desirable.

It is in the above background that doubts have been expressed on the wisdom of building flyovers or widening city roads to resolve the problem of gridlock on a long-term basis. Though such investments help in easing traffic flow in the short-term, congestion resurfaces at a higher volume. This results in re-emergence of congestion at an even higher level of traffic. Source: Draft National Urban Transport Policy (NUTP)

III: Transportation Priority 2: Public versus Personal Transport ACTION

- Invest in improving public transport rather than in adding to road capacity through building flyovers or widening roads. However, while increasing the number of buses from 200 to 800 in the City, first plan and implement bus lanes and bus bays.
- Restructure State Transport Corporation (STC) to provide common services such as depots and terminals and similar other services that cannot be provided by the private operators. These operations should be closely regulated by the STC through well structured contracts.
- Adopt measures that restrain the use of motor vehicles through market mechanisms such a higher fuel taxes, higher parking fees, reduce availability of parking space, longer time taken in travelling by personal vehicles vis-à-vis public transport.
- Choice of Auto Fuels: Alternatives to petroleum based fuels are emerging. CNG has been adopted in a big way for bus transport in Delhi. Electric trolley buses are also being proposed. Electric two wheelers and cycles are also under development. It is necessary that cleaner technologies are encouraged and adopted in the City so that the problem of vehicular pollution can be more effectively dealt with.

III: Transportation

Emergency Medical Services (EMS) is a part of public transport. Network of equipped ambulances with common access number should be operated by the State.

Priority 3: Non-Motorised Transport:

Non-motorised transport are environment friendly and have to be given due share in the transportation system of the City. The problems being faced by them would have to be mitigated as part of an urban transport policy.

ACTION

- Segregate right of way for pedestrians, bicycles, rickshaws and hand carts. This will help improve traffic flow, increase the average speed of traffic, reduce accidents and reduce emissions. 50% of the funds for providing cycle tracks in 30 lakh-plus cities for upto 100 kms of such tracks is being supported by the Central Government. 10 % of the country's population is disabled. Due to lack of access
- in public places this population is largely confined to their houses and therefore 'invisible'. The Persons With Disabilities Act, 1995 stipulates making our cities barrier free. The segregated right of way, roads and public transport should be disabled friendly.

IV

Roads

Priority 1: Road Safety

Growth of motor vehicles in Nagpur City

1986* 1993* 1997* 2005# 86000 176000 239000 480000

Road Accidents in Nagpur City Persons Killed 1996* 1997* 1998* 2005@ 1997* 1998* 1996* 2005@ 1496 204 1575 1644 1628 217 387 246

In addition, in 2005, serious injuries were 637 and non-serious injuries were 1067.

*Draft National Urban Transport Policy (NUTP) *Nagpur Municipal Corporation, @Nagpur Traffi

The three 'E's of Road Safety are road Engineering, Enforcement, and Education. It is imperative that the road engineering should be of the highest order and in conformity with NHAI / BRO / IRC / CRRI / MERI / MOST norms as applicable. It is a fact that road accidents in Nagpur have increased post IRDP. This is attributable to badly engineered IRDP roads. The recommendations of the Upa-Lokayukta U/S 12(1) of the Mah Lokayukta and Upalokayukta Act, 1971, dated 06.03.2004 pertaining to the IRDP works undertaken at Nagpur dwells upon the aspect of badly engineered IRDP roads.

IV: Roads

Enforcement becomes near impossible in the face of badly engineered roads. Limitations of enforcement in such a scenario cannot be overcome by increasing number of traffic personnel.

Education is a continuing process, the importance of which cannot be overstated. However, as in the case of enforcement, education must be supported by correct road design and engineering.

ACTION

■ The NMC / NIT / MSRDC and other agencies have still not implemented the recommendations of the Upa-Lokayukta U/S 12(1) of the Mah Lokayukta and Upalokayukta Act, 1971, dated 06.03.2004 and 14.10.2004 pertaining to the IRDP works undertaken at Nagpur. As the recommendations deal with rectifying the mistakes, the implementation of the recommendations will go a long way in increasing road safety in the City.

IV: Roads

ACTION

Recommendation No. 6 of the Upa-Lokayukta regarding IRDP: "In the light of the experience gained in the implementation of the project, Government in PWD/MSRDC are both advised that further road works, as part of the IRDP through local bodies including the Corporation should not be taken up unless a clear Certificate is given jointly by the highest technical officer in that local body and the Municipal Commissioner that they have carefully appraised the availability of the supervisory staff or the alternative supervisory mechanism in place (PMC for instance) and are fully satisfied that the supervisory staff is capable of adequate supervision over the projects to be executed. This certificate must be countersigned by the Jt. MD of the MSRDC who holds a rank of the Secretary, PWD. Unless this is done, no new works should be allowed through this route."

The spirit behind this recommendation is that roads should be well designed and executed. Since these recommendations were clearly directed at the local bodies in Nagpur, they apply to projects to be taken under JNNURM and Nagpur CDP.

V

Water Supply, Sewerage & Drainage

Priority 1: Revival of Reservoirs, Wells for water supply: The people created nine out of the ten major tanks in the city, and only one, Lendi Talao was a totally natural water body. Today it is believed that large water sources tapped quite some distance away can only supply requirements of large cities and that one can afford to neglect local water sources. This mindset has already resulted in serious damage to water bodies in the urban areas. This is a great loss to the community, because together with nonuse of available water, the cultural, recreational, economic, microclimatic, ecological, religious, bio-diversity and town planning significance of lakes and tanks is also compromised.

Source: Nagpur Biodiversity Strategy & Action Plan by VNHS Centre for MoEF.

ACTION

Ambazari & Gorewada used to provide 14 & 16 MLD of water respectively. Rest of the lakes and tanks, namely, Telangkhedi, Sonegaon, Sakkardara, Pardi, Jumma Tank, Pandharabodi, Naik Lendi and Dob Talao can provide another 50 MLD. Another 40 MLD could be generated from open wells. Thus, 120 MLD or more than 20% of the City's water needs could be met from within.

V: Water Supply, Sewerage & Drainage

Priority 2: Revival of Reservoirs: Supreme Court Ruling

(2001) 6 Supreme Court Cases 496 (Before Syed Shah Mohammed Quadri and S. N. Phukan, JJ.) Hinch Lal Tiwari Appellant; *Versus* Kamala Devi and others Respondents. Civil Appeal No. 4787 of 2001*, decided on July 25, 2001

- A. Tenancy and Land Laws U. P. Zamindari Abolition and Land Reforms Act, 1950 (1 of 1951) Ss. 122-C, 3(14) and 117(1)(i) Allotment of abadi sites to SC/ST, agricultural labourers etc. Pond (talab) having fallen into disuse because of drying up, but some portion covered by water in rainy season Held, no part of it can be allotted to anyone as abadi site for purposes of building houses Further held, Govt., including Revenue Authorities should have taken note of drying pond and redeveloped it so as to prevent ecological disaster High Court erred in allowing writ petition of Respondents 1-10 and confirming allotment to them of a dry area of 10 biswas forming part of pond originally covering 15 biswas UP Zamindari Abolition und Land Reforms Rules, 1952, R. 115-P. Objection regarding allotment of abadi sites for preferential categories Generally Water bodies Partly dried up pond Held, no portion of it can be allotted as a housing site for any category of person
- B. Environment Protection and Pollution Control Water bodies Ponds drying up and falling into disuse Held, Govt. including Revenue Authorities, are duty-bound to clean and develop them so that ecological disaster may be prevented and a better environment provided to people at large
- C. Environment Protection and Pollution Control Community resources Need for their protection Forests, tanks, ponds, hillocks and mountains etc., held, are nature's bounty They help in maintaining the delicate ecological balance and need to be protected for that reason
- D. Environment Protection and Pollution Control Generally Healthy Environment Held, enables people to enjoy a quality life which is the essence of the right guaranteed under Art. 21
- E. Constitution of India Art. 21 Generally Nature and Scope Enjoyment of a quality life, held, is the essence of the right guaranteed under Art. 21

V: Water Supply, Sewerage & Drainage

Priority 2: Reservoirs: Allahabad High Court Ruling

Agra ponds to get fresh lease of life

■ By Brij Khandelwal AGRA, Dec 30 (IANS)

ENVIRONMENTALISTS in the ity of the Taj Mahal have won a najor battle to save its water bod-es that were once a pride of

Agra.
The Allahabad High Court has taken a stern view of the phe-nomenon of multi-storey build-ings mushrooming on Agra's community ponds, disturbing the fragile ecological equilibri-um. District authorities have been asked to furnish a list of all the ponds that were listed in the gazette during the British

scertaining the extent of eco-

disturbing the extent of ecological damage wrought by unfettered construction of huge structures over these ponds that have rapidly shrunk in tramber.

According to B K Joshi the way of the state of the petitioner, Agra had more than a south of the petitioner. Agra had more than a south of the builder-main-bureaucrat a handful has survived.

The district magistrate, the Uttar Pradish Chief Secretary and the Secretary for town planning have been served notices and asked to file affidavity within a spen and dozens of others within the municipal limits, which cradesh Chief Secretary and the Secretary for town planning have been served notices and asked to file allidavits within a fortnight. HIVADA DEC V, e5

The builders who have invested hige sams of money for raising structures after brazenly leveling the ponds are spending skeepless nights, fearing demolitions may not be far off.

According to government records, 70 (Hegal structures have been identified.

foshi said the high court order

he Allahabad High Court has taken a stern view of the phenomeson of multi-storey buildings mushrooming on Agra's community ponds, disturbing the fragile

are under threat from colonisers, have to be saved, the judicial order declured. The classic case is that of the state-owned Life Insurance Corporation (Life Dubling at the Sanjay Place commercial complex that was built after levelling a picturesque pond. Demolishing inwould prove to be a test for both the judiciary and the administrative machinery. The Agra Development Authority has itself been guilty of sunctioning plans for market complexes on community posts.

munity pends.

The Tota ka Tal market is glaring example. But since it belongs to a Bharatiya Janata

belongs to a Bharaciya Jonata Party (BJP) legislator, the moot point is whether the Agra Development Authority would be able to take any stern action. Mean wittle Agra Development Authority Sergrary Chundri-Prakash Libonical Structures that have come up after leveling the community points. Surendra Sharma, president of the Broy Mandal Herstage Conservation Society, said the instoric ponds in Mathura and Vrindavan also stand threatened because of Jarge-scale house building activities. building activity.

V: Water Supply, Sewerage & Drainage

Priority 3: Pollution abatement of rivers & reservoirs

The average consumption of potable water per person per day is not more than 40 litres out of 135 litres supplied. 3/4th of the water consumption per person per day literally goes down the drain. Ironically, this treated water when discharged through the sewerage system itself becomes a cause for pollution. This 370 MLD flows back through sewerage lines into river streams & reservoirs sounding the death-knell of Nag, Pili and Pohra Rivers.

Priority 4: 100% treatment of sewage

Less than 30% of the sewerage generated in the City is treated. The centralised technology (STPs) in vogue has proved to be ineffective not only all over the country but all over the world. The need is to implement de-centralised systems that are manageable, cost effective and environment friendly.

V: Water Supply & Sewerage

ACTION

For effective pollution abatement in river streams and reservoirs in the City, it would be necessary to treat the sewage by a 2-stage decentralised method rather than by conventional centralised sewage treatment plants. In this method it is proposed to first partially treat the sewerage in Sewage Reactors (improved version of septic tanks with increased number of baffles). The effluent from the houses would then flow through the existing sewer network into ETPs located across the City.

Where possible reed beds and polishing ponds could also be created for secondary and tertiary treatment.

This treated water of a non-potable reusable grade could be redistributed through a dual-line system for re-use. Remainder of this treated water can be discharged into the river streams. Not only will this result in effective pollution abatement but would also revive the rivers; while at the same time the City's dependence on outside sources of water would be reduced.

VI Solid Waste Management

Priority 1: Segregation and reuse of solid waste:

The segregation of Solid Waste and its reuse is a matter of bringing about attitudinal change in stakeholders including Civic Authorities to accept greater responsibility for waste minimization and management.

ACTION

The Civic Exnora of Tamilnadu is a successful Model that can be replicated. The waste is pre-segregated by each household. A person in uniform, gloves and shoes collects the garbage. Organic waste is collected into the green bin of the cart and recyclable waste into the red. At the 'Zero-waste centre' located in the neighbourhood, the organic waste is converted into compost. The recyclables and the compost are sold. A charge of Rs. 20/- is collected from each household. This system covers 40% of Chennai and 75% of its suburbs. Exnora was recognised by the UN conference on Human Settlements in 1996 among the 100 Best Urban Practises. For further details on how the system works one can get in touch with exnora@vsnl.com or 044-8153377.

VI: Solid Waste Management & Renewable Energy

Priority 2: Utilization of Landfill for energy generation Methane gas captured from landfills is used to generate electricity. Methane is created when garbage breaks down in a landfill. The electricity is sold. Additionally, the utilization of methane in this manner reduces greenhouse gas emissions.

ACTION

Explore the possibility of producing energy through Landfill Gas Utilization Project.

Sector VII: Renewable (Solar) Energy Applications at City Level

Priority 1: Refuse electric supply to hoardings

As per the reports published, governments in Italy and France have refused to supply electricity for hoardings. The respective companies intending to put hoardings are asked to generate energy by using solar systems. Such a method can be easily and effectively implemented in our City too.

ACTION

In addition to hoardings, the same principle can be applied in the City for lighting of roads, parks and playgrounds which would reduce the energy bill of NMC.

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Presentation on urban poor and slums

Points of discussion

- Denotification & Notification of slums
- Reforms in GR
- Tenure rights
- -Land should be acquired by single authority
- -Authorize a single authority for "Patta Vatap" irrespective of the landownership pattern
- Simplify the Patta Vatap procedure

- Accommodation for urban poor
- Dormitories for migratory workers on pay and use basis (nominal charges)
- Slum networking- agreed
- Awareness among beneficiaries- agreed

Priorities

- (A) Housing for EWS & LIG for the Urban poor and slum dwellers.
 - Reservation in the Development plan for EWS & LIG
 - Govt agencies (NIT & MHADA) should restart these programmes
 - Sufficient marketing opportunities and spaces for SHG's

- (B) SRA scheme should be implemented with private public participation
 - Should be implemented in selective sites (Fresh survey should be conducted)
 - Should be implemented with proper public management
 - Initially model slums should be developed
 - Low rise higher density development

- (C) Infrastructure provision in slum areas
- Convergence of funds
- Community contribution (maintenance)
- Social responsibility



Roads, Traffic and Transportation

CDP Nagpur

Strategy and Action Plan

- Complete the transport network
 - Missing links, ROB/RUB, River bridges
- Augment Bus Transport System
 - Addl eco-friendly buses, Depots and other facilities, Private participation to be explored parallelly
- Traffic management
 - Junction improvements, signal system, signs, markings, busbays, parking plaza, traffic calming, traffic education
- Road Improvements
 - Better road design, Removal of bottlenecks, provision for utilities
- MRTS
 - Public Private partnership to be explored if operator is available
- Capacity Augmentation
 - Outer Ring Road, flyovers, transport plaza

T&T Investment Priorities

• Item	Cost (Cr.)	<u>Priority</u>
 Missing Links of DP 	100	Α
 Bus Transp. System 	100	Α
 Traffic Management 	50	Α
 Bridges on Rivers 	20	Α
 ROB / RUBs 	100	Α
 Road Improvements 	50	Α
 MRTS with PPP 	50	Α
 Outer Ring Road 	650	В
Flyovers	50	В

Sewerage and Solid Waste Management

Prioritization findings

Sewerage System

- Priority A
 - 100% underground sewerage connectivity to citizens
 - 100% connectivity with STPs
 - 100% treatment of sewage and maximum utilization of effluents like gas, water and manure

Sewerage System

- Priority B
 - Decentralization of Sewerage Treatment
 Projects by using modern techniques such as DEWATS
 - Regular maintenance of existing network by using modern tools and equipments
- Priority C
 - All the roads must have storm water drains

Sanitation

- Priority A
 - Open defecation free city
 - Public convenience facilities (pay and use) for areas without toilet facilities
- Priority B
 - Provision of low cost sanitation for individuals and BPL families in slum areas

Solid Waste Management

• Priority A

- 100% door to door collection with segregation of wet and dry waste at source
- 100% transportation of SW direct to disposal site
- Conversion of wet waste to energy and compost
- Dry waste to be segregated into combustible/ recyclable and non-combustible/ inert and converting it into other suitable forms
- Disposing inert into landfills

• Priority B

Levy of charges for door-to-door collection

Urban Environment

Priority A

Land use

- Influence NIT to work in consultation with NMC in development planning
- Demarcate heritage zones and precincts and prepare DCR for them.
- Separate DCR for old and central Nagpur
- Reserve bio diversity corridors
- DCR should be "disabled friendly"

Economy

- Large reservations for Hospitals, CBDs, Institutions use urban design principles
- Informal business activities reserve hawking areas at identified market areas
- Pedestrianization of commercial areas

Priority A

- In transport planning refer to Draft National Transport Policy (Reservation for Pedestrians and cycle tracks)
- Appoint a committee to remove areas of conflict between in Guntewari act and problems in Nagpur thereof (MRTP Act)
 - All reservation sites should be developed explore PPP
- Encourage Row houses/ courtyard houses with common wall construction with larger front and rear margins – (Low rise high density housing)
- Energy efficiency design Standards for Green Building should be part of DCR

Priority A

- Identify areas for mixed use neighborhood planning in existing and new areas
- Site specific approach for removal of slums from eco sensitivity areas
- SRA may be reviewed. Action points are
 - Evenly spread EWS/ LIG housing across the city at all residential and mixed use neighborhoods (Implement the JNNURM guideline in this regard)
- Transit accommodation for migrants

Priority A

- Transportation
 - Prepare a master plan for Nagpur as per NUTP
 - Promote public transport and discourage use of private vehicles
 - Promote ecofriendly fuels for public transport
 - Emergency medical services network of equipped Ambulances with common access numbers.
 - Implement the Lokayukta recommendations w.r.t New and existing roads in IRDP Nagpur

Priority A

- Water supply and sewerage
 - Revival and rejuvenation of water bodies, rivers and wells (Latent capacity of 120 mld) as per guidelines
 - Frame a water reuse policy for new buildings
 - 100% treatment of sewerage
- Solid waste management
 - Implement projects for collection and disposal of Solid Waste as per Supreme Court guidelines
 - Waste to energy projects
- Use solar energy for hoardings, streetlights, parks etc..
- Establish a regional lab for monitoring of environmental parameters under NMC.



Water supply

Nagpur City Development Plan Prioritization Workshop March 12, 2006

STRATEGY AND ACTION AREAS



Priority A



- Reduce transmission and distribution losses
- Conduct a leak detection study and reduce the UFW
- Conduct a study to check the quality of water being supplied
- Conduct an energy audit
- Individual connections to all households
- The metering must be as per the usage and not on the basis of supply
- It is possible that the water is getting polluted as water from a nearby sewerage line seeps in. Such potential and existing polluting sources need to be checked. Systems refurbishments shall be taken up.

Priority A



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PRIORITY B

- Refurbish the old distribution system
- Identify illegal water connections and discourage public stand post (PSP)
- In slum areas, there are several places wherein there is a PSP and the nearby households have water connections. Such PSPs must be removed.
- Rain water harvesting to be made compulsory for al new projects



PRIORITY C

 Prepare an asset inventory and map the water supply systems for effective monitoring

Investment



Investment Priorities

- Sourcing of water: Rs400 crores
- Laying raw water pipeline Priority A
- New treatment plant Priority B
- ESR and distribution Priority B
- Leak detection and water audit: Rs28 crores Priority
 A
- Energy audit: Rs25 crores Priority A
- Strengthening of water supply distribution system: Rs115 crores - Priority A
- Water recycling and reuse: Rs250 crores through Public Private Partnerships - Priority A

ANNEXURE K: PRESENTATIONS MADE DURING FINAL WORKSHOP ON 8TH MAY 2006



Under JNNURM Framework

May 2006

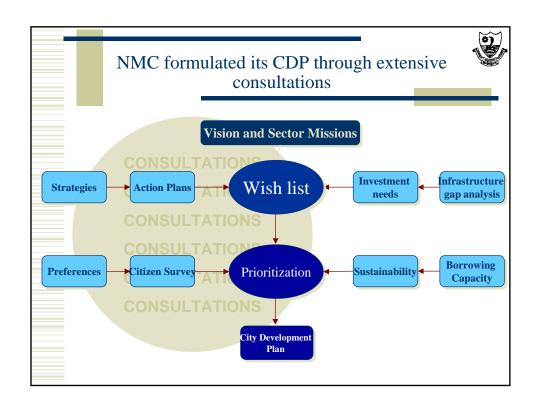






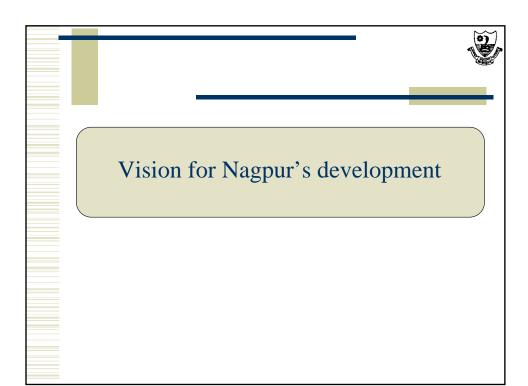
CDP process for Nagpur Technical assistance from USAID, FIRE -D Project CDP consultant - CRISIL Infrastructure Advisory Citizens' involvement as per JNNURM guidelines NMC Workshop **Prioritization workshop** 3 12th Mar'06 23rd Jan'06 Mission stakeholder **Investment Planning** consultations Stakeholder **Citizen Survey** consultations **Credit Strength Assessment Final CDP Workshop** Vision and Mission workshop 8th May '06 5th Feb '06

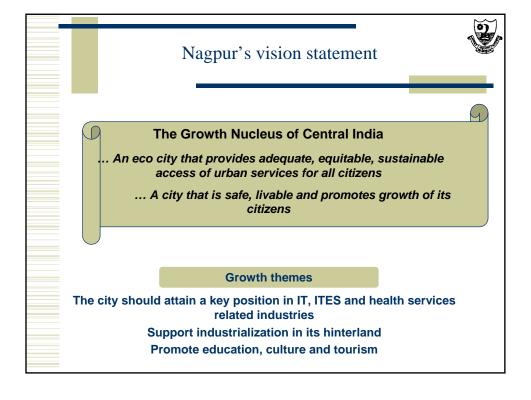
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Structure of the presentation • Vision statement • Sector missions • City Investment Plan • Financial Plan • Reform action plan • Challenges ahead

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Sector missions

Sector mission and action areas

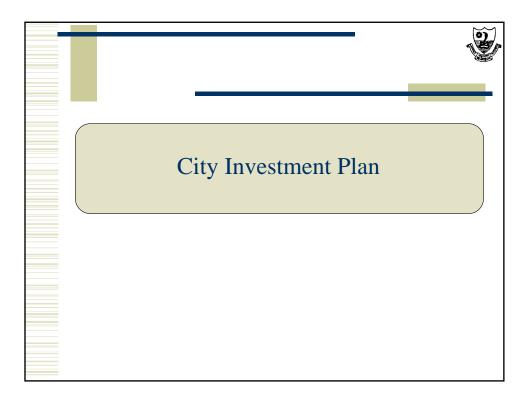


- **Economic Development**: Improving infrastructure, service delivery, governance
 - attracting PPP and creating coordination for implementing economic policies in the urban region,
 - Develop collaborations between industries and institutions to further establish Nagpur as dynamic city of the region
- Governance: Redefining the roles of administration & citizens in order to achieve citizen empowerment
- Land Use: Land use provisions and DC rules to promote diverse economic activities in an environmentally sustainable manner
- **Urban Poor**: Affordable housing, tenure security, integrated service provision, access basic infrastructure needs and social amenities



Sector mission and action areas

- Core Municipal Infrastructure: Adequacy, reliability and accessibility to core municipal services for all citizens. NMC to be the prime service provider
- Traffic & Transportation: Road widening, parking facilities, improve public transport system in the short run. Implement BRTS, MRTS in the long run
- Urban Environment: Conservation of rivers, water bodies, natural environment of city and make environment an integral part of every decision making process
- Culture & Heritage: Preserve cultural character and encourage tourism appropriate to the city environs



Water Supply and Distribution

Current Status

- Water availability at 480 MLD
- 85% of city population have municipal water connection
- Average daily water supply range from 2-4 hours
- Transmission and distribution losses at 38%
- Only 241 MLD of water is billed out of 480 MLD supplied
- Annual revenue expenditure at Rs.95 crores against receipts of Rs.50 crores



Mission – Water For All and 24 x 7 Supply

- Water audit and energy projects
- Strengthening of water supply system
- Reducing raw water transportation losses Pench IV
- Augmentation of source
- Water reuse

Water Supply and Distribution



Projects Identified

- ◆ Pench IV Rs.422 crores
- Leak detection Rs. 3 crores
- ◆ Energy and water audit Rs.50 crores
- Strengthening the water supply
 system Rs.115 crores

Total – Rs.590 crores



Pench IV: Project Details

- Part-1: Lifting Water at Pench Reservoir and conveyance upto Mahadula
- Part-2: Conveyance of Water from Mahadula to Proposed WTP at Godhani
- Treatment and further cconveyance upto MBR at Governor House
- Part-3: Transmission of Water upto different (Existing & Proposed) ESRs from MBRs, including proposed Elevated Service Reservoirs.
- Part-4: Upgradation & Proposed Distribution System



Water Supply and Distribution

Pench –IV: Project Benefits

- Annual Saving to NMC in Raw water tariff @ Rs.8.70 crores
- Annual Energy Saving to NMC @ Rs. 0.90 crore
- Due to conveyance of water through pipe line. instead of previously through open canal Saving in Quantum of water by 20-25%
- Availability of additional water for Irrigation & Drinking to meet the NMC water demand upto 2015
- Time availability for canal maintenance will improve irrigation efficiency



Leak Detection and Water Audit: Project Details

- Recycling of backwash of WTP water to conserve water
- Installation of flow meter and replacement of faulty consumer water meter
- Rehabilitation of service connections to reduce Water Leaks in Distribution System
- Improvement meter reading / billing system by implementing AMR
- Implementation of active leak control program to reduce water loss

100

Water Supply and Distribution

Leak Detection and Water Audit: Project Benefits

- To bring down the UFW to 15% from existing more than 50%
- Increase revenues from water charges for self-sustainability
- To meet the growing demand for increase in population
- Better accountability of water supplied in each area against billed quantity
- Equitable distribution of water
- Raw water cost will reduce by Rs.1.65 crore /year
- Better accountability for raw water intake and zonal distribution



Energy Audit: Project Details

- Improving and replacing existing inefficient pumping machinery
- Diversion of rising main of Pench stage I pure water pumping station to Rajbhavan
- Repairs to existing flash mixer, clarifloculator, rapid sand filters etc.
- Replacement and diversion of rising main of Old Gorewada pure water pumping station:
- Replacing existing inefficient pumping machinery at Kanhan pure water pumping station
- Providing and laying of parallel rising main of Kanhan pure water pumping station from Automotive square to Subhannagar water tank

Water Supply and Distribution



Energy Audit: Project Benefits

- Reduction in cost of water with improvement in energy efficiency
- Replacement of ageing, inefficient equipment for better serviceability



Strengthening of Water Supply System: Project Details

- Provision and installation of feeder mains and distribution network at:
- 1. Dighori zone
- 2. Nandanvan Zone
- 3. Sakkardara Zone
- 4. Hudkeshwar Zone
- 5. Jaripatka-Nari Zone
- 6. Dhaba Zone
- 7. Gittikhadan Zone
- 8. Takliseem Zone
- 9. Chinchbhuwan Zone

Water Supply and Distribution



Strengthening of water supply system: Project Benefits

- Improve the serviceability of old water supply systems
- Improve piped water supply coverage from existing 85% to 100% connectivity
- Improve the efficiency in water supply systems
- Saving in tanker water cost

Sewerage System

Sewerage System



Current Status

- 60 % of the city area covered by sewerage network
- Inadequate sewage treatment facility
- Sewage generated in the city: 380 MLD (average flow) 606 MLD (peak flow)
- Sewage undergoing treatment before flown into the river: 80-100 MLD
- Pollution of water bodies





Mission: 100% Coverage in sewerage collection and treatment and rejuvenation of water bodies

- Strengthening sewerage network
- Setting up Sewerage Treatment Plants
- Changing old and defective sewer lines
- Water recycling and reuse

Sewerage System



Projects Identified

- ◆ North Zone sewerage system Rs.130 crores
- ◆ Central Zone sewerage system Rs. 239 crores
- ◆ Southern Zone sewerage system − Rs.146 crores
- Water recycling and reuse Rs. 250 crores

Total – Rs.765 crores

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Sewerage System

Sewerage System: Project Benefits

- Sanitation and hygiene
- Reduction in outbreaks in diseases
- Reduced ground water pollution
- Help maintain "Clean and Green" image of Nagpur city

Water recycling and reuse



Water Recycling and reuse: Project Details

 Supply of well-treated and disinfected recycled water to industries for non-potable uses

Water Recycling and reuse : Project Benefits

• Water conservation thereby increase the supply capacity of the system

Storm Water Drainage System

Storm Water Drainage System



Current Status

- 30-35 % of the road network is covered
- During monsoon, almost all storm water drains are flooded
- Problems of back flow in the sewers that lead to unhygienic conditions and epidemics



Storm Water Drainage System

Mission: Strengthening and rejuvenation of natural drainage system

- Rejuvenation of Nag and Pilli rivers
- Nallah Canalization and strengthening
- Lake rejuvenation
- Drainage along the roads

Storm Water Drainage System



Projects Identified

- ◆ Drainage along side Road Rs.45 crores
- Nallah canalization Rs.56 crores
- Strengthening existing nallahs
 Rs.45 crores
- Rejuvenation of Nag & Pilli rivers Rs.50 crores
- ◆ Lake rejuvenation Rs.50 crores

Total - Rs.246 crores

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Storm Water Drainage System

Storm Water Drainage System : Project Benefits

- Reduced water pollution
- Recharging of ground water
- Reduced incidences of flooding and epidemics
- Build the flora and fauna of water bodies
- Recreation and entertainment

Solid Waste Management

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Current Status

- Solid waste generation 875 MT per day
- About 75% of the waste is collected under the door-to-door waste collection scheme
- Waste is not disposed off in a scientific manner

Solid Waste Management



Mission: Clean City, Bin-free City

- Development of land fill site
- 100% House to House Collection
- Segregation at source, composting and waste to energy

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Projects Identified

- Sanitary Landfill
- Rs.25 crores

• Bin Free city

- Rs.25 crores

• Total

- Rs.50 crores

Solid Waste Management



Sanitary Landfill: Project Benefits

- Disposal off non-biodegradable solid waste in sanitary landfill facility
- Groundwater and Soil Protection through the provisions of an impermeable liner system at the base of the facility
- Preservation ambient air quality through scientific operation plan of the secured landfill facility.

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Slum Development and Housing

Slum Development and Housing



Current Status

- 40% of the population lives in slums
- There are about 427 slum pockets in the city spread over an area of about 17 sq. kms.
- Of the 427 slums, 292 slums housing 80% of the slum population are notified.
- Provision of basic urban services like water supply and sanitation is inadequate



Slums and Housing

Mission: Slum Free City

- Access to basic services to slum dwellers
- Slum rehabilitation programme
- EWS / LIG Housing
- Public toilets, night shelters, destitute children's homes, beggar's home, working women's hostel and marriage halls

Slum Development and Housing



Projects Identified

- ◆ SRA Rs.1350 crores
- EWS / LIG Housing Rs.125 crores
- ◆ MHADA Rs.42 crores
- ◆ Urban Poor Amenities Rs. 75 crores
- ◆ Total Rs.1392 crores

Roads, Traffic and Transportation

Roads, Traffic and Transportation



Current Status

- Good quality of road network on account of IRDP
- High dependence of personal vehicles especially twowheelers for transportation
- Ineffective public transportation system
- Inadequate parking facilities



Roads, Traffic and Transportation

Mission: Safe and Efficient Traffic Management

- Road Network improvement with widening, ROBs, flyovers planned to remove traffic congestion
- Development of outer ring road
- Installing traffic signage's, signals, markings and intelligent traffic management systems
- MRTS

Roads, Traffic and Transportation **Projects Identified** Outer ring road Rs.650 crores **ROBs** Rs.128 crores Road widening Rs.200 crores Bridges over rivers Rs.8 crores Rs100 crores Flyovers Traffic Management Rs 50 crores **MRTS** Rs.1500 crores **Total** Rs. 2636 crores

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Roads, Traffic and Transportation

Bridges over rivers: Project Details

- Bridge at Nag river near Nidos
- Bridge at Hati Nalla
- Bridge near old Shukrawari

Road, Traffic and Transportation



RoBs: Project Details

- 4lane ROBs along with approaches at Kalamana Market junction
- Construction of 6 lane cable stayed RoB in lieu of existing old 2 lane RoB near Santra market
- ROB at Itwari, Maskasth and Mangalwari
- RUB at Mominpura



Traffic Management

Traffic Management: Project Details

- Improvement of junctions by installing CCTV surveillance systems and area traffic control sensors
- Conversion of ATS with LED base plus solar energy system

Social Amenities

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Social Amenities



Projects Identified

• Destitute Home (one)

- Rs. 1 crore

Marriage Halls (ten)

- Rs. 5 crores

• Night Shelters (four)

- Rs 4 crores

• Public Toilets

- Rs 5 crore

Total

-Rs.15 crores

Summary of city investment plan

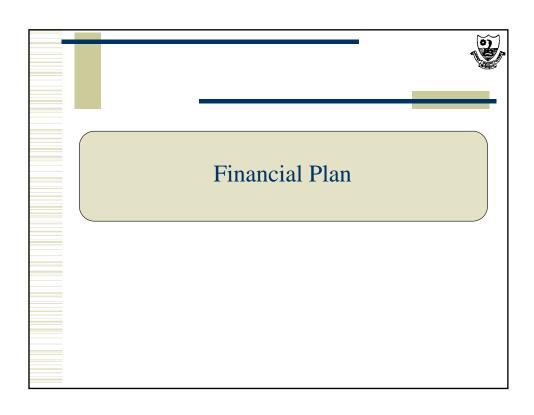


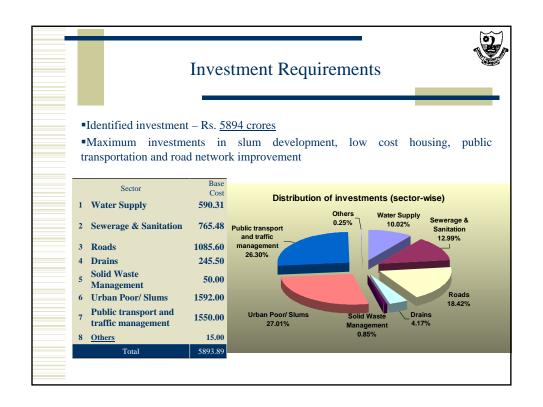
	Sector	Cost (in Rs. cr.)
1	Water Supply	590.31
	Pench IV	422
	Leak detection	3
	Energy and water audit reports	50
	Strengthening of water supply system	115
2	Sewerage & Sanitation	515
	North zone	130
	Central zone	239
	South zone	147
	Water recycling and reuse	250
3	Roads	1085.60
	Outer ring road 6 lane highway	650
	Seven ROB's within the city	128
	Ten flyovers	100
	Road widening and improvement works	200
	Bridges over rivers	
4	Drains	245.50
	Drainage along roads	4:
	Nallah canalization	50
	Strengthening existing nallahs	4:
	Rejuvenation of rivers Lake rejuvenation	51

5 Solid waste	Sector	Cost (in Rs. cr.)
5 Solid waste		
	management	50.00
Sanitary land	lfill	25
Bin free city		25
6 Urban poor	and slums	1592.00
NIT (EWS/	LIG housing)	125
MHADA		42
SRA		1350
Urban poor a	amenities	75
7 Public trans	sport and traffic	1550.00
' managemen	t	1550.00
Traffic mana	igement	50
MRTS		1500
8 Others		15.00
Destitute hor	mes	1
Marriage hal	ls	5
Night shelter	rs	4
Public toilets	3	5
Grand total		5894

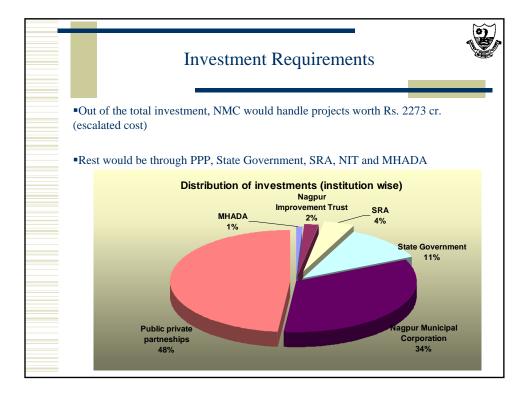
City Investment – Rs. 5894 Crs

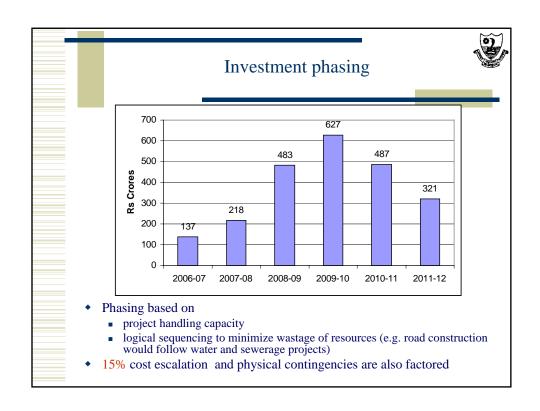
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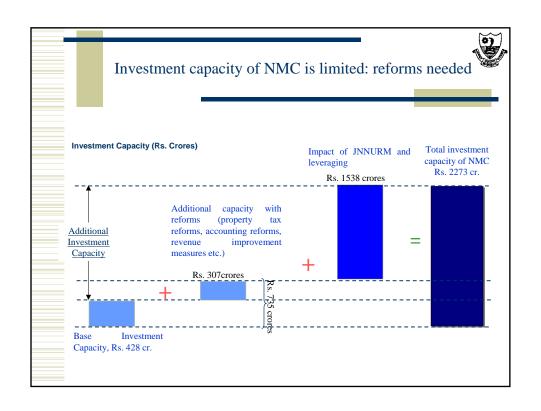


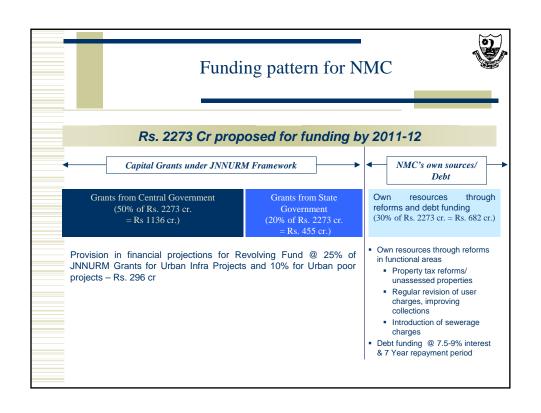


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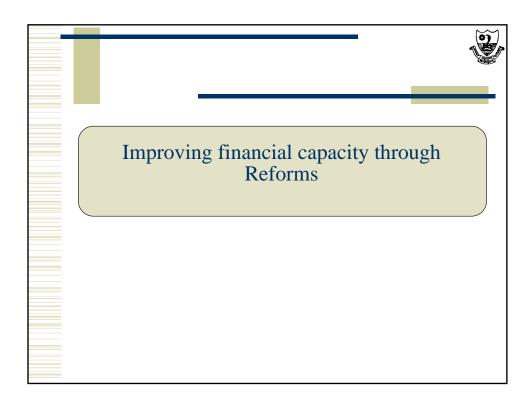


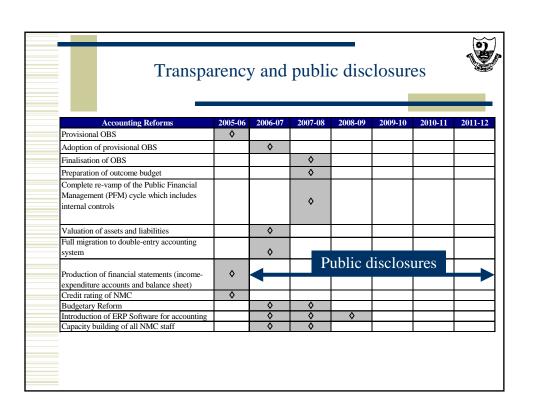






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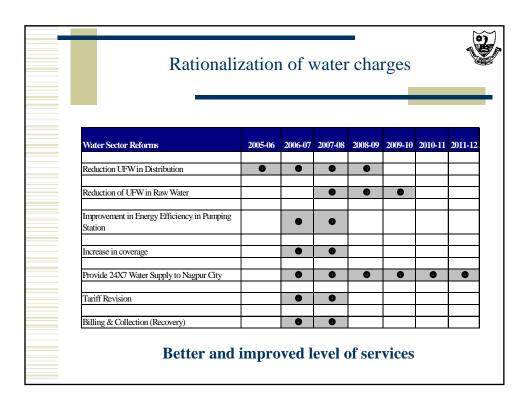


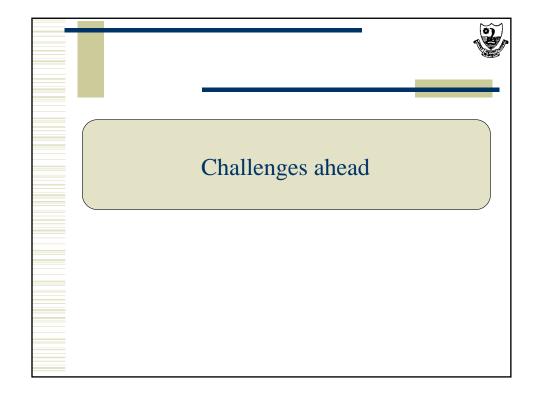
Improved access through e governance

- Geographic Information Systems
- Interactive voice response system
- Citizen interface through kiosk
- Networked Municipal offices
- Document management system
- Web portal

2005-06	2006-07	2007-08	2008-09	2009-10	2010-11					
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Implementing the CDP



- Citizens participation
- Reforms
- Monitor implementation and update CDP every five years

Nagpur CDP – Current status



Projects approved by GoI in 2005 – 06

Leak detection - Rs 3 crs

• Water Audit - Rs. 25 crs

• Energy audit - Rs. 25 crs

◆ Strengthening of water supply system — Rs. 44 crs

• ROBs - Rs.90 crs

• Total - Rs. 187 crs

Nagpur was one of the first cities to benefit under JNNURM

Together let us pledge to make our Nagpur..

The Growth Nucleus of Central India

... An eco city that provides adequate, equitable, sustainable access of urban services for all citizens

... A city that is safe, livable and promotes growth of its citizens

Thank you





