
GOVERNMENT OF KARNATAKA

# Evaluation of the Processes in the Implementation of Jawaharlal Nehru National Urban Renewal Mission in Karnataka

KARNATAKA EVALUATION AUTHORITY

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# Executive Summary

The Jawharlal Nehru National Urban Renewal Mission has been conceptualized as more than the sum of its projects. Its strategy is designed to link urban policy interventions to the specific requirements of individual cities. The exercise begins with the formulation of the City Development Plan with the help of consultants, which identifies projects that are expected to generate specific outcomes in the city. And the support of the Government of India in the financing of this process is linked to the state governments and urban local bodies introducing reforms in their functioning. An evaluation of JnNURM must then look at the entire process and not confine itself to the implementation of the projects.

In evaluating JnNURM in Karnataka, as indeed any other Indian state, we are faced, right at the outset, with a fundamental question: is the city the ideal starting point for an urban policy intervention? It may be so in the advanced world where the urban-rural relationship has been defined for a century or more. But while India is in the midst of rapid urbanization we are still in a situation where the 2011 Census records that less than a third of the population lives in urban areas. The process of transformation from the rural to the urban is thus far from over. And the relationship between villages and cities remains alive, not just because of migration from the rural to the urban but also because the old homes in villages remain a safety net for workers who find the pressures of the city unrelenting. A meaningful understanding of policy interventions in the urban cannot then begin with individual cities. It must go back a step and begin with a glimpse into the process of urbanization and its influence on individual cities.

The process of urbanization in Karnataka is not evenly spread across the state. In terms of trends in urbanization there

are at least five distinct categories of districts. The four districts of Bengaluru, Mysore, Dakshina Kannada and Udupi are marked by strong urbanization trends. Dharwad, Bagalkot, Belgaum, Ramnagara and Bengaluru Rural have registered moderate signs of urbanization. Bidar, Kolar, Chikballapur, Haveri, Chitradurga, Hassan, Davangere, Tumkur and Chamarajnagar are districts with weak urbanization. Mandya, Chikmagalur, Shimoga, Uttar Kannada, Kodagu and Gadag raise the possibility of de-urbanization. And Bellary, Gulbarga, Yadgir, Bijapur, Koppal and Raichur are districts facing population pressure in both their rural and urban areas.

In terms of the dynamic roles they play in the larger process of urbanization it is useful to categorize the districts into three groups: those that are primarily engines of growth; those that are primarily centres of skill development for the neighbouring rural population; and urban centres under population pressure and thus in urgent need of basic facilities. While the precise categorization of all of Karnataka's urban centres into these three groups is beyond the scope of this evaluation there are a couple of cases that stand out even in preliminary analysis. In addition to Bengaluru and Mysore, Mangalore with its influence over the districts of Dakshina Kannada and Udupi would be an urban centre that needs to be treated as an engine of growth. In addition, a city in the three contiguous districts of Dharwad, Bagalkot and Belgaum can also be treated as an engine of growth. While the process of urbanization may not be as strong in these districts as it is in Dakshina Kannada and Udupi, the fact that they are a part of the relatively backward region of northern Karnataka may be reason enough to develop them as engines of growth. Taking this larger picture into account would require that the City Development Plans be designed to not just cater to the needs of a particular city in isolation but also in a way that helps manage the larger process of urbanization as a whole.

## City Development Plans

There are also other reasons why the current approach to the City Development Plans may need a review. At the outset, even when seen in isolation, the City Development Plans are not consistent with the task of urban renewal highlighted in the name of the Mission. The renewal of the inner city has a very low priority in the CDPs of the two Mission cities, Bengaluru and Mysore. The CDPs do relatively better when dealing with heritage, especially in Mysore. But the place of heritage in the CDP for Bengaluru, as revised in 2009, is minimal and rather superficial. It is thus clear at the very first stage of the Mission that the focus is more on urban development rather than on urban renewal.

In dealing with urban development the CDPs tended to come up short when faced with four major challenges. First, there was the challenge of the mismatch between the administrative area and the economic area of a city. The CDP was expected to plan for the area that came within the administrative

boundaries of the city. Indeed, when Bengaluru transformed it administrative boundaries with the creation of the Bruhat Bengaluru MahanagaraPalike in 2007, after the first CDP was made, it was decided to create another plan leading to the revised CDP of 2009. The administrative boundaries of Bengaluru, however, left out large parts of the information technology industry, including Electronic City. As a result the area that was being planned for in Bengaluru left out the main engine of growth in the city. In Mysore too there is a mismatch between the boundaries that emerge by tracing the built up areas of the city and the administrative boundaries of the city. Moreover, the tourism circuit around Mysore, which is an important economic resource of the city, includes Srirangapatna which is beyond not only the city's administrative boundaries but also the district boundary.

The second major challenge was in terms of managing the growth of the city. The revised CDP for Bengaluru laid considerable emphasis on the development of townships. It did not however adequately distinguish between a residential township and one that was built around an economic activity. Bengaluru's history suggests that townships built around an economic activity, such as the public sector townships, do succeed. But residential townships, like the one built in Kengeri, tend to stagnate until they grow towards areas of the city offering economic activity. The CDPs however focused primarily on residential townships.

A third constraint built into the City Development Plans is that the poor are believed to live only in slums. Thus projects catering to the Basic Services to the Urban Poor are entirely confined to slums. A striking result of the NIAS survey however is that slums are far from being the only places where the poor reside. Less than 30 per cent of the very poor in Bengaluru live in slums, and slums account for the residence of less than 14 per cent of the other poor. A fairly significant number of the poor live in villages that have been engulfed by the city. And over three-fourths of all of Bengaluru's poor live outside slums. The pattern in Mysore is equally interesting. The city is well on its way to becoming slum free. But this only means the poor have to live elsewhere.

A fourth limitation of the CDPs arises from the fact that when planning for the city in isolation there is a tendency to ignore the pressures that the city places on its surrounding areas. The CDP for Bengaluru shows a lack of sensitivity to the possibility of a conflict of interests between the city and the rural areas. In its SWOT analysis the CDP for Bengaluru lists the water availability in the Cauvery basin as one of the strengths of the city. But the availability of this water is subject to an inter-state dispute. It is also not clear that farmers within Karnataka will be willing to allow Bengaluru as much water as the city demands from the Cauvery. The city is already beginning to feel these pressures in poor-monsoon years.

These limitations of the City Development Plans were compounded by erroneous estimates of the growth in the populations of Bengaluru and Mysore. The CDP for Bengaluru begins by estimating that if existing trends continue the city (the core BMP area and the CMCs together) will reach a population of 98.15 lakhs by 2011.[1] The CDP however goes on to argue that Bengaluru cannot maintain its growth rate and hence projected the 2011 population of Bengaluru to be just 80.15 lakhs. The 2011 Census provisional figure of the population of BBMP is, at 84.44 lakhs, more than 5 per cent greater than the estimates used in the CDP. In the case of the CDP for Mysore the error was in the opposite direction with the provisional population figures in the 2011 Census being around nine per cent less than the figure projected in the CDP. And since the projected population of the CDP was used as the basis for calculations for the subsequent sections the errors were transferred to the rest of the Plans.

## Choice of Projects

In theory, the implementing agencies are expected to develop a shelf of projects based on the CDPs and JnNURM guidelines. But with the CDPs being less than overwhelming, these agencies have gained a greater freedom in their choice of projects. Indeed, it is not entirely unknown for the implementing agencies to already have a shelf of projects which they try to carry out either through their own funds or through funds from various lending agencies. They then try to use the JnNURM funding as an alternative source of finance.

In making these projects consistent with JnNURM requirements, as well as in later stages of the process, consultants play an important role. Their inputs are used both in the formulation of the detailed project report and the management of the implementation of projects. Each component under JnNURM has its own panel of consultants and it is rare to see a consultant working on a range of projects under different components. In dealing with consultants both at the level of the CDP and individual projects there is the challenge of finding the appropriate inputs that they can provide. On the one hand, in cases where their inputs are not in line with government thinking, there is the possibility of officials not buying into the recommendations of the consultants. On the other hand, when consultants merely rearticulate official thinking their value to the entire process is reduced. The system works best only when the knowledge deficits in official circles are clearly identified and the consultants brought in to remove them. In such cases the officials take responsibility for the entire strategy even as they make full use of inputs sought from consultants.

Given the prominent role played by the implementation agencies in the choice of projects the overall direction of JnNURM

[1] Jawaharlal Nehru National Urban Renewal Mission, *Revised City Development Plan, Bengaluru 2009, Vol I*, p 57.

in Karnataka has to be traced from the patterns that emerge on the ground. JnNURM is predominantly an urban infrastructure programme. The Urban Infrastructure and Governance (UIG) component accounts for around two-thirds of the approved costs of JnNURM projects. Together with the costs of the projects under the Urban Infrastructure Development Schemes for Small and Medium Towns (UIDSSMT), infrastructure accounts for nearly four-fifths of the approved costs of JnNURM. The relative importance given to infrastructure when compared to anti-poverty components is large enough in the small and medium towns with the approved costs in infrastructure accounting for twice the approved costs in schemes for the poor. Bengaluru and Mysore reveal an even sharper difference as in the two Mission cities taken together infrastructure accounts for well above four times the costs of the Basic Services to the Urban Poor component.

A second, somewhat predictable, pattern that emerges from the distribution of approved costs is the primacy of Bengaluru in JnNURM in Karnataka. The projects in Bengaluru account for 61 per cent of the total approved costs of projects under JnNURM in the state. This dominance occurs within a larger preference for the chosen JnNURM cities over other small and medium towns. Bengaluru and Mysore, taken together, account for over four-fifths of the approved costs of JnNURM projects in Karnataka. This pattern is consistent with the focus of JnNURM on major cities.

## Choice of UIG projects

Within this dominance of Bengaluru and Mysore there is a further concentration in specific sectors of Urban Infrastructure and Governance. In both Bengaluru and Mysore mobility has an important place in terms of approved costs under the UIG component of JnNURM. Transport accounts for as much as 44 per cent of the approved costs of UIG projects in Mysore. The number seems somewhat lower for Bengaluru at 22 per cent. But once we add other mobility related projects like underpasses, grade separators, sidewalks and flyovers to the list, the share goes up to a third of the approved costs of UIG projects. In Bengaluru drainage projects as well as storm water drains account for close to another third each of the approved costs. As a result the three sectors – mobility, storm water drains and other drainage – account for 99 per cent of the approved costs.

In Mysore the degree of concentration of approved costs of projects under JnNURM across different sectors is less, even if only in comparison to Bengaluru. The non-transport related projects under the UIG component do have one major alternative focus in water projects. The water sector accounts for 33.9 per cent of the approved costs for UIG projects so that water and transport together account for nearly 78 per cent of the total UIG costs. But the remaining 22.1 per cent is distributed across several sectors: storm water drains, heritage, zoo infrastructure and solid waste management.

The picture that emerges from the mobility related projects under JnNURM in Bengaluru is one that is focused primarily on improving the conditions for vehicular traffic. Underpasses, grade separators and flyovers are meant to increase the speed of the traffic, the TTMCs help organize the bus system as well as provide parking, and the Volvo and Marco Polo buses are expected to tempt car and other private vehicle users to switch to public transport. Some of the other projects mentioned in the CDP, particularly those relating to pedestrians and cyclists do not find a place in the projects that were chosen.

In Mysore too the JnNURM projects that gained approval were designed to help vehicle users. The two-lane Bengaluru to Mysore-Nanjangud segment of the Outer Ring Road was to be upgraded to six lanes. Transport infrastructure facilities were to be developed, including building of an Intelligent Transport System and an Innovative Environment Project for Mysore city. JnNURM also funded the acquisition of 150 buses.

The storm water drain system in Bengaluru has come under severe strain due to the inadequately planned growth of the city. BWSSB notes that cleaning natural drains is becoming a challenge for most municipal authorities owing to factors such as the discharge of untreated wastewater, encroachment, and illegal buildings. This has led to the overflow of storm water or the flooding of rainwater. This is most visible when roads turn into drains, and there have also been deaths in storm water drains and flooding of houses. The NIAS survey points out that this challenge is particularly serious in some of the older areas of the city, with the West Zone being the most seriously affected. The CDP has suggested the construction, remodelling and rehabilitation of storm water drains and roadside drains, removing silting, construction of retaining walls, laying of beds, providing enabling and awareness information architecture, and Green Area development. JnNURM has targeted the most urgent task of remodelling primary and secondary storm water drains in the four major valleys, namely Hebbal valley, Vrushabhavathi valley, Koramanagala valley, and the Challaghatta valley.

Solid waste management is an issue that has reached crisis proportions in Bengaluru. This problem may have been accentuated in Bengaluru by the city's decision to rely almost entirely on door-to-door collection of household garbage. The NIAS survey saw as many as 20.5 per cent of the households in Bengaluru admiting to disposing their garbage at the street corner. This problem is particularly acute in the slums as well as the outlying zones of Byatrayanapura and Rajarajeshwarinagar. And since street corner garbage bins have been removed in most parts of the city, a significant portion of the city's garbage is left directly on the side of the streets. In contrast Mysore's performance in garbage collection is very much better with as high as 97.2 per cent of the households saying they use the corporation's collection system.

The BBMP has been planning a strategy to deal with the challenge of solid waste, including developing Public Private Partnerships at different stages of the MSW management cycle through service contracts, management contracts and concession contracts.Municipal Solid Waste Management in Bengaluru is not however funded under the JnNURM initiative.

The projects that have been chosen under JnNURM in Mysore show a greater awareness than the CDP of the need for a broader approach to solid waste management. As of March 2013, MCC has approved ₹ 29.85 crores for the development of an integrated municipal solid waste management plan using the PPP model.

Water supply is potentially Bengaluru's most serious infrastructure concern. The city originally relied on the many lakes within it. But as the lakes dried up and the lake beds put to other uses, Bengaluru became more dependent on river water and groundwater. Till recently the north of the city was supplied largely through water from River Arkhavati. But now that source too has dried up, leaving Bengaluru dependent on only the River Cauvery and the city's groundwater. There are already some signs of an emerging crisis visible in the access to water in Bengaluru.

The crisis is accentuated by the problems of uneven distribution. There is differential access to tap water both across different zones of the city as well as across economic classes. In two of the zones in the periphery of the city, Rajarajeswarinagar and Byatarayanapura, more than half the households do not have a functioning tap inside them. The economic divide is reflected in the fact that over 80 per cent of the households in the slums of Bengaluru do not have a functioning tap inside them.

JnNURM's contribution to addressing this emerging water crisis is through two major projects. The first of these approved projects is the augmentation of drinking water to the seven former municipal councils that form the periphery of Bengaluru. This is to be done by providing an additional 100 million litres per day from Cauvery Water Supply Scheme,Stage IV,Phase 1. The second approved project seeks to develop bulk flow metering and monitoring systems for Bengaluru's water distribution network.

The water crisis in Mysore does not appear to be as severe as that in Bengaluru. The proportion of households without a functioning tap inside them is only a fraction of that in Bengaluru. This is also true for all the indicators of water stress that the table lists: using public taps, buying water from tankers or in pots, or buying drinking water in cans. The difference however seems primarily one of magnitude. The issues that affect water supply and distribution in Mysore are similar to those in Bengaluru, only they are on a smaller scale.

The main thrust of the JnNURM influence on the water situation in Mysore is on modernization and augmenting water supply. The focus on modernization was also enhanced by the Centre. The only suggestion to change a project in the JnNURM process

came in the case of a water supply project in Mysore where the CSMC suggested that the proposed water scheme be converted to a 24/7 supply scheme.

Despite being a globally recognized metropolis Bengaluru is still short of ensuring that every household has a toilet within it. The NIAS survey indicated that three per cent of households in Bengaluru do not have a toilet within them. What makes the problem more serious is that there are some parts of the city where the problem is much more pronounced. In at least one zone in the periphery of Bengaluru, Mahadevapura, the proportion is nearly 12 per cent. And in the slums across the city the proportion of households without a toilet in them is as high as 22 per cent.

The situation is made worse by pressures that have been developing on the underground sewage network. The capacity of the sewers, both primary and secondary, is insufficient. With storm water also getting into sewage lines there are increased sewage flows in the rainy season, sometimes even leading to the mix of sewage and rainwater overflowing onto streets. Just as storm water gets into sewage lines, there is also the problem of sewage getting into storm water drains. Sewers from slums and low-lying areas are sometimes directly connected to storm water drains. This also contributes to the pollution of lakes and the resultant growth in the number of mosquitoes. JnNURM addresses the challenge of sanitation and sewage in Bengaluru at multiple levels. It has two approved projects focusing on sanitation in the erstwhile City Municipal Councils of Krishnarajapuram and Mahadevapura. Other projects look at the underground drainage systems in Yelahanka, Kengeri, Rajarajeshwarinagar, Dasarahalli, Byatarayanapura and Bommanahalli. In addition, a project seeks to replace or rehabilitate parts of the existing sewerage system of Bengaluru.

Mysore is one of the oldest cities to have an underground drainage network. Most of the old city had underground drainage by 1904. JnNURM projects are aimed at remodelling the underground drainage (UGD) network in the old areas of the city and developing a sewage treatment plant (STP) for the areas that are currently not covered.

The heritage strategy of JnNURM in Karnataka is focused primarily on Mysore. The Mysore CDP focuses on the six areas which have been highlighted in the JnNURM heritage tool kit. These are mainly defining the importance of heritage, identifying, listing and grading heritage buildings, understanding the legal status as well as the institutional set up, sorting out the financial system and also the infrastructure which is required to promote tourism around heritage buildings.

Two main projects have been approved under the heritage component of JnNURM. The first project focuses on the heritage core and urban renewal. And the second is on water management through surface and rainwater harvesting at Sri Chamarajendra Zoological Gardens.

The Bengaluru CDP however is not as comprehensive. It outlines the various well known tourist destinations in Bengaluru and proposes to renovate 300 heritage buildings, develop cultural centers, budget hotels and convention centers. There has however been no heritage project approved under JnNURM for Bengaluru.

## Choice of UIDSSMT projects

The Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) was launched by simply merging the two then existing schemes: the Integrated Development of Small and Medium Towns (IDSMT) and Accelerated Urban Water Supply Programme (AUWSP). The choice of specific projects is expected to be based on City Level Investment Plans (CLIPs). But the shortfalls in the small and medium towns are so widespread that a large number of projects come into consideration. And the possibilities were further extended by a willingness to go beyond the strict prioritization in individual CLIPs. A look at CLIPs for 18 of the 30 towns with UIDSSMT projects reveals that in nine of them the projects were among the priorities listed in the plans while in another nine they were not. But the projects were generally among the important infrastructure requirements of the towns. Water and drainage account for the major chunk of the 38 UIDSSMT projects spread over 30 districts. Water supply alone accounts for over 60 per cent of the approved costs of UIDSSMT projects. Storm water drains and underground drainage taken together account for around 22 per cent of the approved costs of projects, with projects covering roads and drains accounting for over 16 per cent.

The multiplicity of factors determining the choice of UIDSSMT projects may make it difficult to come up with a simple explanation for their location. It is quite clear,though, that the projects are not evenly distributed across the state. As many as ten eligible districts – Chamarajanagar, Kodogu, Udupi, Chikballapura, Tumkur, Chitradurga, Bellary, Raichur, Gulbarga and Bidar – have not received any projects while the per capita cost of projects in some other districts is quite high. And there is no apparent reason related to urbanization that explains this distribution. There are zero project districts in regions that are rapidly urbanizing, like Udupi; districts that are deurbanizing, like Kodagu; and districts that we have classified as being under population pressure, like Gulbarga. The case of Udupi is particularly interesting as it is getting no support for its own internal tendency to urbanize.

## Choice of BSUP projects

JnNURM calls for an inclusive approach to the challenge of providing basic services to the urban poor. In practice, though, a considerable part of this inclusiveness is lost. The first source of loss of inclusiveness is the method used to identify the poor. As has already been pointed out, JnNURM identifies the poor as those living in slums,

while the NIAS survey shows a significant proportion of the poor do not live in slums.

A further scope for exclusion of the poor has been built into the JnNURM initiative concentrating on housing alone. As a result the focus of the projects was concentrated on services that could be expected to come with housing, such as water and sanitation. And by the very nature of the projects, these services account for only a small fraction of the total costs. Moreover, since these facilities came with the JnNURM houses they did not quite address the problem in the other poor households. This is a particularly serious concern in a situation where nearly all the houses in slums have to use either public taps or shared taps.

There should, arguably be greater concern on the health front. JnNURM is expected to address these concerns by providing health centres. But the size of these initiatives is meagre when compared to the task at hand. The minimal expenditure on health facilities must be seen in the context of the crisis of confidence that the poor have in the urban health system. This is perhaps most evident in the decision the poor make on where their children should be born. The NIAS survey indicated that in Bengaluru, over the preceding three years of the survey less than a fifth of slum dwellers and well below half of the lowest asset category went to government hospitals to give birth. Being forced into the hands of more expensive private nursing homes and hospitals the poor considered other options, with around 16 per cent of them giving birth at home. And when they have a more stable place to stay, even if it is in a slum, close to 36 per cent of the births are at home. If we add those in slums who go back to their hometown or village for the birth, close to half the slum population of Bengaluru prefers not to use the medical facilities the city provides, whether public or private for the birth of their children.

In education the situation would appear to be a little better. Almost all children between 5 and 15 in both Bengaluru and Mysore are attending school, though this is still not quite the 100 per cent that it should be. More importantly the very significant proportion of children, even of the poor, who take tuition after school could be interpreted as a vote of no confidence in the quality of education provided in class. And the JnNURM response is almost non-existent. Housing projects that had existing educational facilities close by have not been provided with new ones in the plan. Consequently in Bengaluru, providing school buildings to BSUP houses is expected to cost barely ₹ 0.2 crores out of the total infrastructure cost ₹ 113.84 crores. In Mysore, there is no provision for school buildings in the on-going projects; however, there is a provision for an informal education centre that is expected to cost ₹ 0.19 crores.

Within this framework the Basic Services to Urban Poor component of the JnNURM generated 14 projects in Bengaluru. While the pattern in terms of

number of units suggests a focus on construction, the picture in terms of dwelling units – a more relevant indicator – points to a clear emphasis on rehabilitation. Nearly two-thirds of these units – 14,754 units – were under rehabilitation projects.

In the development strategy for slums there is a strong case for an in-situ approach. This allows for minimal displacement of the population, allowing them to remain as close as before to their workplace and possible schools for their children.And an attempt was made to prefer this approach.In-situ development accounted for 66 per cent of the dwelling units in Rehabilitation projects, 72 per cent in Construction projects and 90 per cent in Redevelopment projects in Bengaluru.The preference for in-situ projects can be seen in Mysore as well, though the success has been a little less than in Bengaluru.

### Choice of IHSDP projects

As in the case of the UIDSSMT projects the distribution of Integrated Housing and Slum Development Programme projects is also not even across the state. There is a large contiguous belt consisting of Kodagu, Dakshina Kannada, Udupi, Uttara Kannada, Haveri and Davangere that have not received any IHSDP projects. Along with Bijapur and Charmarajnagar they constitute a set of eight districts that have not received any projects. They stand out in contrast to Ramnagara that has received the most attention. It must be pointed out that three districts Udupi, Kodagu and Chamarajnagar have been completely left out of the JNURM process: they are not eligible for the UIG and BSUP projects and have not been given any UIDSSMT or IHSDP projects.

## Implementation of projects

There are then two distinct stages in evaluating the effects of JnNURM. The first step is to look at the implementation of the projects. It is only after the projects have been completed that we can move on to the question of looking at their outcomes. The process of implementation of projects is sought to be controlled primarily through the release of funds.Till early 2013 instalments were released once the utilization certificate was submitted; this process has been changed wherein the release of funds has been tied up with the physical progress of the project.This process of monitoring is undoubtedly useful in preventing leakages of funds as well as monitoring the quality of the assets created.But they are less sensitive to delays, as holding back funds is the instrument of enforcing control.This monitoring process is also not adequately equipped to help identify and remove other causes of delays, which are widespread cutting across various centres.

### Implementation of UIG projects

Transportation projects are among those that have had the least delays, though they have not always been completed on schedule.Since the projects in Bengaluru have all been completed it is possible to gain

some insights into their outcomes for the city. The TTMCs have, in effect, three broad roles: they improve the bus terminuses; they provide parking facilities, and they are revenue generating assets that taps the real estate value of land owned by the transport corporations. With over three-fourths of the built up space being used up for parking and office space that is rented out, the TTMCs are clearly a successful exercise in creating revenue generating assets. Since over a fifth of the built up space is available for bus depots, terminuses, passenger amenities, and office space for BMTC there is a significant contribution to the smooth running of the bus system as well.

In evaluating the effect of the buses funded by JnNURM we come up against the difficulty in separating the effect of the JnNURM contribution from that of the other components of Bengaluru's bus system. The JnNURM buses were distributed across the depots of the BMTC and then merged into the regular service. Thus there is little difference between the JnNURM buses and the rest of the buses in the same segment of the system. Evaluating the impact of JnNURM is then best done by comparing the progress during the JnNURM years and a comparable number of years immediately preceding the setting up of the Mission. The growth in the average earnings per kilometre was higher in the JnNURM period than in the earlier period, with the growth being much higher in suburban routes. And if we take the percentage load factor as a sign of congestion in buses, there is a noticeable decline in the growth of the average percentage load factor both in the city and the suburban bus networks.

The long-term impact of this success would however have to be measured in terms of its ability to draw commuters away from private transport and towards public transport. A successful initiative would result in a decline in the growth rate of the cars and two-wheelers registered. The picture here is mixed both across cities and across modes of private transport. The growth rate in the number of cars registered in Bengaluru district in the seven-year JnNURM period is higher than the growth rate in the seven years preceding the launch of JnNURM. This would suggest that the luxury buses have not quite been able to get car owners in Bengaluru to rely more heavily on the public transport system. In contrast the rate of growth of two-wheelers registered in Bengaluru district over the two periods has declined sharply. It would appear that two-wheeler owners in Bengaluru are being drawn towards public transport. Mysore presents the opposite picture. The rate of growth of car owners has declined while that of two wheelers has increased, if only marginally. Any shift away from public transport in that city is occurring with car owners, while two-wheeler owners seem largely unaffected.

Beyond the public transport system the JnNURM initiatives in transportation in Bengaluru are primarily in improving mobility on the city's roads. Bengaluru Development Authority has undertaken three projects – two flyovers and one underpass.

All three projects have taken significantly longer periods to complete than was estimated in their Detailed Project Reports. This has caused the costs of all the projects to escalate quite significantly. It is also worth noting that the delay was greater in the flyover projects than in the single underpass project. The BBMP had a much larger bouquet of projects aimed at improving mobility on Bengaluru's roads. It too faced the challenge of delays and cost overruns, with all the projects being delayed. The delays in the BBMP projects are the result of a very wide variety of reasons. The availability and acquisition of land would appear to be the single largest cause for delay, with Lokayukta investigations, financing cost overruns and the absence of work fronts also being significant causes. Mysore too has seen considerable delays for similar reasons.

In the case of water and sewerage projects in Bengaluru there has been delay in the implementation of 10 of the 11 projects. One of the main reasons for delay was the time take in obtaining clearances for the right of way from numerous departments. The picture in Mysore on the implementation of water and sewerage projects is not very different from that in Bengaluru. Going by the time schedules given in the DPR, both the projects in Mysore handled by KUWSDB have been delayed.

The Storm Water Drain projects in Bengaluru have had to overcome several obstacles. This has taken its toll both on the time schedules of the projects as well as their cost. Among the causes for the delay was that the projects had to get approval before they proceeded with land acquisition. The real estate boom in 2005 made many landowners reluctant to give up their land for the compensation offered by BBMP. Moreover, many slum dwellers were given land in areas where the storm water drain was planned. In order to meet the higher costs BBMP had to request the Government of Karnataka for assistance, which resulted in further delay. Also, getting labour to work in the unavoidable unhygienic conditions led to workers falling ill, thus adding to the human and financial costs. The MUDA project for remodelling storm water drains in Mysore has also been delayed.

### Implementation of UIDSSMT projects

Given the year-wise approval of projects and the status of projects, it may not be farfetched to state that most of the projects seem to have been delayed. Discussions with DMA officials reveal that the reasons for the delay in UIDSSMT projects are not fundamentally different from those affecting UIG projects. The absence of coordination between agencies is a serious problem with UIDSSMT projects as well. There were land acquisition problems in Nanjangud and Shikaripura, which led to litigation in the High Court of Karnataka. But there were also more local factors affecting some projects. In Channapatna and Nanjangud the local representatives were not interested in the sewerage projects, and were insisting on roads and water projects.

### Implementation of BSUP projects

As some of the projects have been completed it is useful to get an idea of the impact of JnNURM by comparing the conditions in JnNURM project units with those in other slums. And the picture that emerges in terms of the effects of JnNURM on basic services to the urban poor is not very encouraging. There is very little difference in terms of the access to services between JnNURM households and households in other slums. Arguably the most striking result is that the provision of these houses does not change even the proportion of households living in rented accommodation. Those living in these dwelling units spoke of other beneficiaries who had preferred to rent out the units they were allotted. In terms of connection to sewage lines too there was not much of a difference. Four-fifths of the slum dwelling units in Bengaluru were without a functioning tap in them and the picture was not very different in the JnNURM dwelling units. This number was much lower in the slums in Mysore, at less than a fifth, and the JnNURM dwelling units had an even lower percentage of houses without a functioning tap in them. The one area where there was a noticeable difference was in the proportion of households without a ration card. The JnNURM households did much better on this score. But this was only to be expected as the allotment of these units would itself depend on the ability to access entitlements from the government.

### Implementation of IHSDP projects

The implementation of the 34 projects sanctioned in Karnataka under the IHSDP brings out several unusual features. As per information on the stated parameters of IHSDP that could be obtained from KSDB, the tender release and the tender award date for a number of projects were the same. There could be various interpretations for this pattern, including perhaps the lack of good contractors who can take up the work in small towns. Again, in a few projects, tenders were already awarded before they were sanctioned by the CSMC. Despite the promptness in awarding the tenders there were considerable delays. Discussions with KSDB officials revealed a variety of reasons for the delay. Since the construction of houses and infrastructure works were taken up in-situ, the existing units had to be shifted in a phased manner, thus causing delay. In some cases the delay was due to the lack of payment of the initial deposit by slum dwellers. The overall picture in terms of completion of projects is not entirely negative. As much as 92 per cent of the dwelling units have been completed. Among the completed units, 83.1 per cent have been occupied.

## Reforms

The 23 JnNURM reforms have been prioritized into two groups, those that are mandatory and those that are optional. In addition, Karnataka has targeted 12 sector-specific reforms in the transport sector. The 35 reforms can further be distinguished

between whether they are to be implemented at the state or ULB level. The Ministry of Urban Development (MoUD) of the Government of India has verified that Karnataka has completed 89.6 per cent of the total reform target as on May, 2013. This puts Karnataka behind only Andhra Pradesh (92.6 per cent) and Maharashtra (90.6 per cent) at the national level.

Underlying this overall success are two questions: are the reforms that have been left out the more difficult, and important, ones? And how much of this reform process is attributable to JnNURM? The answers to these questions are somewhat less comforting. Among the state-level mandatory reforms that have not been completed are the creation of District Planning Committees and a Metropolitan Planning Committee for Bengaluru. This hampers the development of a comprehensive view of the needs of Karnataka's urban centres. In addition, some of the reforms, like rent control and the repeal of the urban land ceiling, that are listed as completed cannot be attributed to JnNURM for the simple reason that they were carried out before the Mission began.

In the mandatory reforms at the ULB–level a somewhat similar pattern emerges. Both Bengaluru and Mysore have managed to complete 92.5 per cent of the mandatory reforms designated for ULBs under JnNURM. The two Mission cities of Bengaluru and Mysore have achieved all the e-Governance elements prescribed in JnNURM. But if we look beyond the specific steps prescribed by JnNURM at the outcomes in terms of actual e-Governance, the differences between the Mission cities and some other cities in Karnataka are much less stark. While several of the procedural rules stipulated are not followed in the non-JnNURM cities, most of cities have already managed to integrate information technology. Similarly, following a state-level migration to the double-entry accounting system in 2005-06, we find that all the ULBs, both JnNURM and non-JnNURM cities, already have this reform in place.

In the case of property tax too it is difficult to attribute the implementation of reforms entirely to JnNURM. There are specific elements like those related to guidance values where Hubli-Dharwad has done better than Mysore. What is more interesting is the difference that can be seen between the picture that emerges in terms of the implementation of reform measures and the one that the NIAS survey throws up from the ground. This difference is particularly wide in the case of the need to achieve a 90 per cent ratio in the collection of property tax. The picture that emerges from the ground is that this condition has been met in all the cities and towns surveyed with the exception of Bengaluru. Though the official view is that the 90 per cent target has been achieved in Bengaluru, nearly a quarter of the house owners in the metropolis said they did not pay property tax.

The emphasis of JnNURM on user charges can be seen in the reforms laying out a series of steps that will help capture

the O&M costs of the services being provided and to then recover these costs. Not surprisingly the first part of this process is easier to accomplish than the latter part. All the cities, both JnNURM and non-JnNURM have separate accounting systems for the services they provide. But ensuring the O&M costs are covered in the user charges for the services provided is more difficult. Bengaluru and Mysore only manage to recover around 70-75 per cent of their total costs every year.

One area where there is a clear difference in approach between the JnNURM cities and the other cities is in organizing services for the urban poor. While internal earmarking of funds for services to the urban poor follows JnNURM specifications in the Mission cities, the other cities do not follow this norm. The earmarking of funds for the urban poor in the other cities is based on existing systems of targeting the urban poor including funding for SC/ST, Backward Classes and the physically handicapped.

Karnataka has managed to complete most of the state-level optional reforms. Broadly speaking, there are only two categories of reforms that are still pending. They are the introduction of a property title certification system and earmarking of at least 20 to 25 per cent of developed land in all housing projects for the economically weaker sections.In the case of the Property Title Certification System, though Karnataka believes that it has achieved this reform, the MoUD does not concur.

A significant portion of the ULB-level optional reforms have been completed in the JnNURM mission cities. The primary reforms that are pending to be implemented are administrative in nature. Some administrative reforms that have been suggested by the Government of India have however not been implemented fully. These primarily consist of rationalisation of the ULB staff and expenditures. Though it is usual for every Municipal Commissioners to have a term two to three years, the ULBs do not offer the guarantee of the same which is required by the reforms.

## Conclusions and Recommendations

The picture that emerges from our evaluation of JnNURM in Karnataka is that contrary to its name the Mission is more an urban development strategy rather than one of urban renewal. Much as a case can be made out for a stronger urban renewal dimension to the Mission, the focus on urban development cannot be scoffed at in a process of significant urbanization. Keeping this wider view of the Mission the experience in Karnataka leads us to the following recommendations:

1. A strategy for intervention in urban Karnataka must move beyond the simple JnNURM classification of Mission cities and small and medium towns, to a threefold classification of urban centres in the state.

2. A separate toolkit must be created for the City Development Plans that are to be made for each category of city or town.
3. A detailed list of heritage sites must be developed in Bengaluru and each of them be marked with a board that not only identifies them as heritage sites but also provides a brief account of why they qualify to be treated as such. In Mysore brief accounts of why individual sites qualify to be considered of value to heritage can be added to the existing boards.
4. Administrative units of the cities must be reduced to viable administrative sizes, while economic plans must be made for several administrative units put together.
5. Government officials must play a larger intellectual role in the formulation of City Development Plans as well the formulation of projects that arise from those plans.
6. There must be greater convergence between JnNURM and economic policies, particularly policies for information technology, biotechnology and manufacturing sectors. As a first step towards such a convergence, a viability gap fund must be created to provide for satellite town projects that involve both industry and real estate developers.
7. Standing-room-only buses at a nominal charge should be introduced within cities at the times when workers go to and return from work.
8. In districts where labour is leaving agriculture buses must be introduced at a nominal charge linking the rural areas with urban centres at times that would help workers go to and return from nearby working places.
9. The government must fix a specific amount of time that can be taken for each task in the implementation of the projects that have potential for avoidable delays. These details must be put up on the relevant websites, along with the actual performance.
10. Basic Services to the Urban Poor must include schemes that directly affect the poor wherever they live, and not be confined to slum dwellers alone.
11. A significant portion of resources set aside for the urban poor through JnNURM or other similar programmes must be allocated to projects that make a substantial difference to the availability of health facilities for the urban poor.
12. The government must consider joint ventures with small landowners of villages that have been recently absorbed into the city to create effective housing for the poor.
13. When judging the efficacy of reforms the government must evaluate not just the implementation of the prescribed reform measures but also the outcomes that the measures were supposed to generate.

1

# INTRODUCTION

The Jawaharlal Nehru National Urban Renewal Mission was started in 2005 with the aim "to encourage reforms and fast track planned development of identified cities. [Its focus was to be] on efficiency in urban infrastructure and service delivery mechanisms, community participation, and accountability of ULBs/ Parastatal agencies towards citizens."[1] In the initial documentation itself it was clear that this specific mission was to be seen in a broader context. In outlining the objectives of the Mission it was made clear that the identified cities were to include "peri-urban areas, outgrowths and urban corridors leading to dispersed urbanisation".[2] This canvas was further widened by extending JnNURM beyond the initially identified cities. The Mission initially consisted of two submissions, one on Urban Infrastructure and Governance (UIG), and the other on Basic Services to the Urban Poor (BSUP). Both these missions were confined to the 63 cities originally identified for the Mission. Later the Mission was extended to all other towns and cities through the Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) as well as the Integrated Housing and Slum Development Programme (IHSDP).

In addition to the expansion on the ground to potentially cover all urban centres in the country, JnNURM can also be seen as an indicator of official thinking on state intervention in India's urbanization. In the absence of an Urban Policy Statement the conceptualization of JnNURM has been treated as the official statement of the direction and priorities of urban policy. And the experience of JnNURM is expected to

[1] *Jawaharlal Nehru National Urban Renewal Mission: An Overview.* Ministry of Urban Employment and Poverty Alleviation, and Ministry of Urban Development; Government of India, p 5.

[2] *Overview,* p 5.

play a key role in determining future urban policy. There were official statements about a second version of JnNURM being introduced when the original mission ended in 2012,[3] though it was finally decided to only extend the initial version till 2014. And there have been indications that future exercises in urban policy will build on the conceptualisation and experience of JnNURM, as was reflected in the recommendation of the High Powered Expert Committee for Estimating the Investment Requirements for Urban Infrastructure Services (HPEC) that the Mission be replaced by a twenty-year programme. When seen in this larger context a meaningful evaluation of JnNURM cannot confine itself to the implementation of the projects being carried out under the Mission. It must also look at the role JnNURM has played in the larger context of urbanization and point to its implications for future exercises in urban policy.

The need for such a comprehensive approach is even greater when the working of a national mission like JnNURM is evaluated for a single state like Karnataka. The progress of JnNURM on the ground and its interaction with the local processes of urbanization tend to vary from state to state. The priorities in infrastructure development too could be different, with at least some states being less inclined to ignore the needs of towns that are not immediately poised to become major engines of growth. A comprehensive evaluation of Karnataka's experience with JnNURM will help the state make its case even as the new urban strategy that has to come into play after 2014 is being conceptualized.

In defining the boundaries of such a comprehensive framework we would need to identify the larger processes that are affected by, or affect, JnNURM. These processes become evident when we remind ourselves of the broad objectives and strategy of JnNURM. The Mission had seven specific objectives: integrated development of infrastructure services; reforms to link asset creation and asset management; addressing fund deficiencies in urban infrastructure services; planned development of identified cities; scale up of urban services with emphasis on access of the urban poor; urban renewal of the old city; and basic services to urban poor. These objectives were to be achieved through the four major components of JnNURM: Urban Infrastructure and Governance (UIG); Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT); Integrated Housing and Slum Development Programme (IHSDP); and Basic Services to Urban Poor (BSUP).

Using this central administrative structure the conceptualization of JnNURM is based on the idea of reducing the entire process of national policy intervention in

[3] "JnNURM: Nath blames local bodies" *Asian Age*, May 1, 2012. http://www.asianage.com/india/jnnurm-nath-blames-local-bodies-834. Accessed on May 8, 2012.

urbanization into a few critical projects and then using the leverage of funding these projects to ensure other desired reforms. Thus, as can be seen in Figure 1.1, the Urban Local Body is expected to develop a City Development Plan on the basis of an implicit understanding of local urban processes. The possibility of the Urban Local Bodies not being adequately equipped to make these plans is addressed by allowing for consultants in this process. The critical components of this CDP are to be seen as individual projects. JnNURM then undertakes to help finance these projects using resources from both the Centre and the states. It is further believed that the Urban Local Body will be so committed to these projects that it would be willing to reform itself in order to be eligible to receive JnNURM funds. And these funds are then expected to result in the desired outcomes.

Given this process it is not difficult to identify the components of a comprehensive evaluation of JnNURM in Karnataka. We begin with an analysis of urbanization in the state and the role of the chosen cities in this process. This provides a backdrop for an evaluation of the City Development Plan in terms of the dynamics of growth of the chosen cities. We then move on to an evaluation of the choice of projects within the framework provided by City Development Plan. This creates the stage to outline the issues that arise in the implementation of these projects. We then trace the progress of reforms using two different reference points. First, we look at the progress of the projects in terms of meeting the norms laid out by JnNURM. And second, we compare the performance of the two cities chosen for the UIG, Bengaluru and Mysore on the one hand and

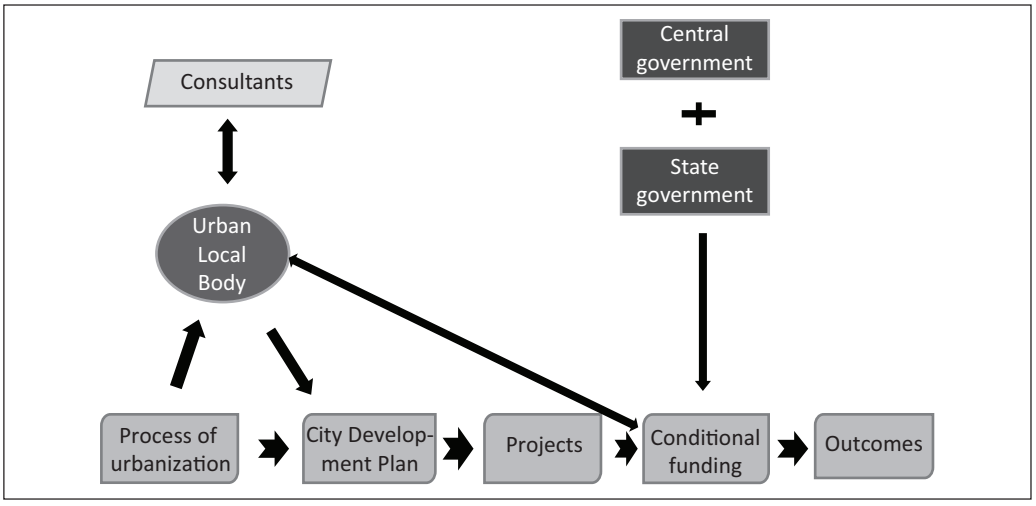



Figure 1.1: The JnNURM process

three other cities on the other. The entire exercise allows us to identify the gaps that have emerged in the conceptualization and implementation of JnNURM, and recommend a set of measures Karnataka can prioritize when the next stage of national urban policy is conceptualized.

When evaluating each of these elements of JnNURM we have been acutely aware of the distinction between an evaluation and an audit. We have at no point tried to verify the facts that were made available to us, as an auditor might. We have accepted these facts in their totality, and acknowledge with gratitude the generosity with which they were given to us by a large number of government officials in different departments. Our focus has been on evaluating JnNURM by placing these facts in the context of the picture of Karnataka's urbanization that emerges from the ground. This allows us to compare the objectives of specific JnNURM initiatives with the outcomes that can be seen on the ground. This task is unambiguous when the results of JnNURM initiatives can be separated from that of other initiatives, as in the case of housing for the poor. But there are a number of other initiatives where JnNURM funds have been merged with a broader state initiative. In such cases we have to necessarily focus on the overall patterns. Where these outcomes are moving in the right direction it can be argued that JnNURM funds have contributed to that success, just as cautionary flags must be raised when the direction of change on the ground is less than ideal.

As this approach places considerable emphasis on the picture that emerges from the ground, a systematic effort has been made to develop as authentic a picture as possible. This picture has been drawn from both secondary sources, including the 2011 census, as well as a large sample survey of five cities in Karnataka. In addition to Bengaluru and Mysore, the two UIG cities chosen for JnNURM, we have also surveyed urban areas from three other districts of Karnataka: Mangalore, Dharwad and Gulbarga. In order to ensure that the picture is not confined to the main city in the districts where there are other towns in the UIDSSMT, the sample covers three of these towns as well: Nanjangud in Mysore, Mulki in Dakshin Kannada, and Shahbad in Gulbarga. This widening of the area covered under the sample ensures that small town urbanization is not completely left out of this picture. This multi-stage stratified sample survey covered 4,371 households and collected information on 18,242 individuals. A note on the sample design is provided in Annexure II. In addition, a separate sample survey was carried out of those who had received JnNURM houses in Bengaluru and Mysore.

2

# Patterns of Urbanization in Karnataka

The Jawaharlal Nehru National Urban Renewal Mission (JnNURM) exercise in urban renewal has moved beyond its initial focus on 63 important cities. The recognition that the urban challenge in India goes well beyond the country's main cities led to the Mission being expanded to cover urban infrastructure as well as slum development in small and medium towns. This wider perspective undoubtedly takes the Mission into aspects of the urban challenge that India cannot afford to ignore, but it still falls short of contesting the dominant view that the country's urban problems can be understood by studying the urban areas alone. All that is required to be done then is to shift the focus of policy makers and academia from the rural parts of the country to urban India.

This view would appear to have common sense on its side and would be supported by much of the literature that comes out of the developed world. In countries where the boundaries between the urban and the rural are clearly demarcated and stable, the urban processes have only a minor and well understood role for the rural. An effective urban strategy in such countries cannot afford to waste too much time and resources understanding trends in the rural areas. But in countries where the demarcation between the urban and the rural is still changing, we cannot be as certain that what is happening in rural areas is not affecting urban centres. If conditions in the rural areas are encouraging, if not forcing, the population to move to urban centres, the growth of the cities and towns will be directly affected. Conversely, when rural conditions are less oppressive the costs of getting skilled and semi-skilled rural labour in the cities would go up. And when rural conditions vary substantially across the country, migration could take place from distant parts of the country thereby affecting the ethnic mix of the cities. In situations where the

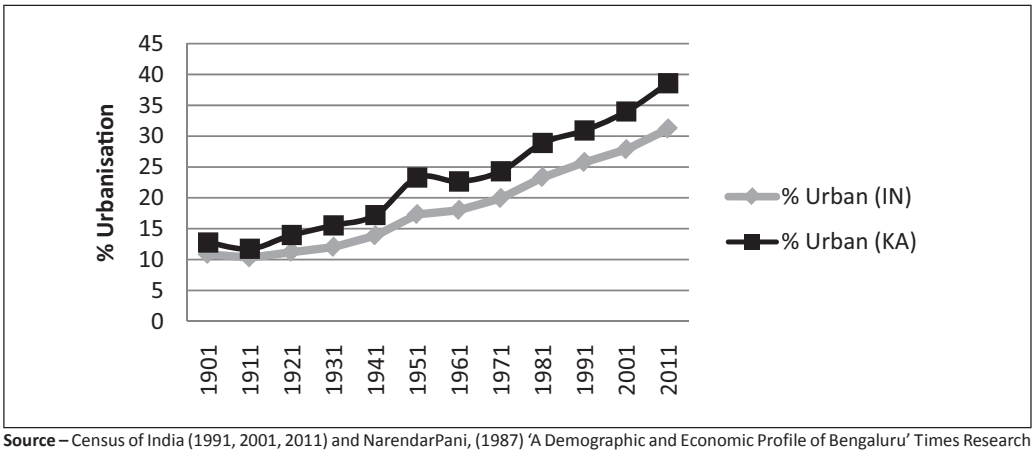
transformation from the rural to the urban is still in progress, urban centres – whether they are metropolises or small and medium towns – must be seen in the context of the larger process of urbanization.

In this chapter we try to place JnNURM in the context of the larger process of urbanization in Karnataka. We begin by looking at the overall patterns of urbanization, making a case for a more dynamic understanding of this process. We then look at the rural areas in the districts of Karnataka to identify the districts that are likely to be releasing their rural population towards the process of urbanization. We then find the points of urbanization in the state that are attracting population from both urban and rural areas within the state and outside. We then outline the implications of this process of urbanization for the strategy underlying JnNURM.

## Patterns of Urbanization in Karnataka

As the case for considering the larger process of urbanization is made on the grounds that the transformation from the rural to the urban in India and Karnataka is far from complete, it would be useful to begin by first setting this matter at rest. It does not require much insight to recognise that the process of urbanization in India is yet to stabilize. India has been urbanizing at a steady rate and will continue to do so for at least a few more decades. As Chart 2.1 suggests, over the last half a century the proportion of urban population in India has increased from 18 per cent in 1961 to 31 per cent in 2011. Significant as this change is, the fact that urban areas still account for less than a third of the country's population leaves little room for doubt that the urbanization process is some way from being completed. We are still some distance away from being

**Chart 2.1: Urbanization in India and Karnataka**




**Source –** Census of India (1991, 2001, 2011) and NarendarPani, (1987) 'A Demographic and Economic Profile of Bengaluru' Times Research Foundation, Calcutta.

able to ignore the rural when trying to understand the growth of our urban centres.

This picture is true for Karnataka as well. The urbanization of the state has been above the national average, as is clear from Chart 2.1. But with just around 38 per cent of Karnataka's population living in urban centres in 2011, the process of urbanization in the state too has some distance to go. And while it might be urbanizing a little faster than the country as a whole, the slope of Karnataka's urbanization curve is not all that much steeper than that of India. Karnataka's towns and cities too must then be seen in the context of the larger process of the transformation of larger proportions of the rural population into the urban. This transformation could be driven both by migration as well as rural areas being re-classified as urban.

The indicator most commonly used to understand the extent of urbanization is the proportion of urban population. The Overview of JnNURM begins with an estimate of the proportion of urban population for the country as a whole. And this figure is not without its uses. It could be used to suggest broad patterns of the urbanization process. And this indicator serves this purpose for Karnataka as well. Table 2.1 tells us that the process of urbanization is spread across the state. Every district in Karnataka is more urbanized in 2011 than it was in 2001. Equally interesting is that there is no district – not even Bengaluru – that is 100 per cent urbanized.

And yet the process of urbanization is far from being evenly spread across the state. To begin with the base from which urbanization is taking place varies very substantially across districts, with the percentage of urban population in a district ranging from a low of less than 15 per cent in Kodagu to a high of 91 per cent in Bengaluru. And the rate at which urbanization is growing too varies quite substantially. The neighbouring districts of Dakshina Kannada and Udipi have seen the proportion of their urban population to total population increasing by over 9 percentage points, between 2001 and 2011, while Raichur has seen a corresponding increase of just 0.1 percentage point. The number of percentage points by which the proportion of urban population in the districts in 2011 exceeds the corresponding 2001 figures is higher than the state average of 4.6 per cent in Kolar, Gulbarga and Bengaluru Rural, while in the remaining districts it is below the state average.

The fact that Bengaluru is not among the districts measured as urbanizing faster than the state average points to one of the two major limitations of this measure. The size of cities is better captured through the absolute numbers of their populations rather than changes in the percentage points of urbanization. The absolute numbers that are represented by a one percentage point increase in urbanization would be much greater in a more populous district than it would be in a sparsely populated one. With the 2011 population of Bengaluru being more than six times that of Kolar, comparing percentage point changes in the two districts

**Table 2.1: Proportion of urban population in Karnataka**

In per cent

| State / District | 1991 | 2001 | 2011 |
|---|---|---|---|
| Bagalkot | NA | 28.97 | 31.67 |
| Bengaluru | 86.16 | 88.11 | 90.94 |
| Bengaluru Rural | 18.13 | 21.65 | 27.11 |
| Belgaum | 23.49 | 24.03 | 25.34 |
| Bellary | 29.86 | 34.87 | 36.30 |
| Bidar | 19.57 | 22.96 | 24.90 |
| Bijapur | 23.52 | 21.92 | 23.02 |
| Chamarajanagar | NA | 15.34 | 17.17 |
| Chikballapura | NA | NA | 22.26 |
| Chikmagalur | 16.89 | 19.52 | 21.07 |
| Chitradurga | 27.00 | 18.07 | 19.78 |
| Dakshina Kannada | 28.30 | 38.43 | 47.60 |
| Davanagere | NA | 30.32 | 32.31 |
| Dharwad | 34.94 | 54.97 | 56.83 |
| Gadag | NA | 35.21 | 35.65 |
| Gulbarga | 23.62 | 27.23 | 32.46 |
| Hassan | 17.37 | 17.70 | 21.23 |
| Haveri | NA | 20.78 | 22.27 |
| Kodagu | 15.96 | 13.74 | 14.62 |
| Kolar | 23.32 | 24.67 | 31.38 |
| Koppal | NA | 16.58 | 16.79 |
| Mandya | 16.23 | 16.03 | 17.08 |
| Mysore | 29.71 | 37.19 | 41.35 |
| Raichur | 20.79 | 25.20 | 25.32 |
| Ramanagara | NA | NA | 24.69 |
| Shimoga | 26.51 | 34.76 | 35.50 |
| Tumkur | 16.57 | 19.62 | 22.48 |
| Udupi | NA | 18.55 | 28.36 |
| Uttara Kannada | 24.14 | 28.66 | 29.14 |
| Yadgir | NA | NA | 18.80 |
| **KARNATAKA** | **30.92** | **33.99** | **38.57** |

Note: Districts marked 'NA' were not created at the time of Census
Source: Census of India 1991, 2001, and 2011

is quite misleading. Not much can then be read into the fact that the proportion of urban population in Bengaluru district has only increased from 88.1 per cent in 2001 to 90.9 per cent in 2011, an increase in terms of percentage points that is well below the state average.

The second major limitation of focusing on the district-wise proportion of urban population alone is one similar to the story of the blind men and the elephant. Just as each blind man recognised only a part of the elephant, district level proportions of urbanization provide only a part of the picture. The proportion of urban population in a district only captures the relationship between the urban population and the rural population in that district. But the process of urbanization is not a local process alone. It also involves people moving in and out of a district's urban areas from other districts, states and indeed countries. It is then quite possible for the proportion of urban population in a district to rise sharply simply because a large part of its rural population has migrated elsewhere. As we shall see in a while, this factor is far from insignificant in several districts of Karnataka.

We would therefore need to look beyond the proportions of urbanization, at the actual movement of populations from the rural to urban areas, and indeed from one set of urban places to another. This would be more effectively done by providing a greater role for absolute numbers rather than percentages alone. But carrying out this exercise for Karnataka alone would also not capture the entire process of urbanization. A significant portion of the migration to and from centres in Karnataka occurs from outside the state. But if we seek not to capture the entire process but look only for the role that different districts of Karnataka play in the overall process, it would provide a picture of the impact urbanization is having on various parts of the state. This would help us identify the districts of the state from which the rural population is moving out and districts which have the urban centres to attract additional population. What we need then is to get some idea of the absolute numbers of the increase in urban population.

## Indicators of the Release of Rural Population in Karnataka

In looking for absolute numbers of the increase or decrease in rural and urban populations in the districts of Karnataka we would need to take into account the fact that urban centres could be growing not because they have become centres of rapid urbanization but simply due to natural causes. In a country where the population as a whole is growing, the urban population would also increase. In order to capture the real tendency towards urbanization it would then be important to first adjust the population of the urban centres for the natural increase that can be expected, based on the number of births and deaths in the district. One way to do so would be to first

estimate an expected population in each district for 2011 by multiplying the 2001 population by the Rate of Natural Increase (RNI), where the RNI is given by the birth rate minus the death rate.[1] Since three new districts have been carved out between 2001 and 2011, the exercise can be carried out for the 2001 districts by clubbing the 2011 figures for the new districts with their mother districts. We could then treat the difference between the actual 2011 population and the expected 2011 population, after taking the RNI into account, as a broad indicator of whether people have migrated into the district or migrated out of it. By carrying out this exercise separately for urban and rural areas we could also get a picture of whether people are migrating in and out of each of these areas in each district. In the process we may also be able to get a picture of the rural to urban migration within a district.

In practice this calculation needs to take into account two other factors. First, the calculation would ideally use the RNI specific to the rural and urban areas in each district. However we have to make do with the single RNI that is available for the entire state. This would necessarily mean that the differences in the birth and death rates across the rural and urban areas of the districts would be ignored. But to the extent that the final results show major differences across districts and between the rural and urban areas of districts, it would appear imprudent to dismiss all the variations as simply being the result of variations in birth and death rates. Second, as already noted, the number of districts in Karnataka went up from 27 to 30 between 2001 and 2011. The calculations have been done on the basis of the districts as demarcated in 2001.

When we look at the RNI-adjusted flows of population, Table 2.2 tells us that the tendency for the actual rural population in 2011 to be less than the estimates based on the Rate of Natural Increase is quite widespread. Of the 27 districts as demarcated in 2001 the only part of Karnataka where the actual rural population in 2011 is greater than the estimated natural increase is the region consisting of the five districts to the northeast of the state – Bellary, Gulbarga, Bijapur, Koppal and Raichur. It could be argued that this part of the state also does not fare too well in terms of development. It is possible then that the birth rate in this region is higher than the state average that has been used in our calculations. But this would have to be offset against the fact that backwardness could also imply a higher death rate thereby reducing the impact on the difference between the birth and death rates that was used in our calculations.

In contrast to these five districts, the tendency for the population of rural areas to grow less rapidly than their natural rates

[1] Rate of Natural Increase (RNI) = Crude Birth Rate (CBR) – Crude Death Rate (CDR) . The RNI has then averaged for the decade. Then, RNI x Population (year) = Population (year+1). The figure for the decade has been compounded annually.

**Table 2.2: Difference between actual 2011 population and projections from 2001 based on rate of natural increase**

| State / District | Rural Population | Urban Population |
|---|---|---|
| **KARNATAKA** | **-2479615** | **3245077** |
| Tumkur | -305097 | 28613 |
| Dakshina Kannada | -248782 | 166141 |
| Hassan | -226666 | 32106 |
| Mandya | -199477 | -11195 |
| Udupi | -195601 | 100480 |
| Kolar | -160045 | 54352 |
| Bengaluru Rural | -156473 | 73859 |
| Chikmagalur | -155454 | -12458 |
| Mysore | -147031 | 126528 |
| Davanagere | -114103 | 14396 |
| Belgaum | -106065 | 64297 |
| Shimoga | -97208 | -23178 |
| Chitradurga | -94978 | 17919 |
| Chamarajanagar | -92195 | 7650 |
| Uttara Kannada | -89877 | -20500 |
| Kodagu | -69273 | -4232 |
| Haveri | -65719 | 17563 |
| Bagalkot | -54307 | 57088 |
| Bidar | -51482 | 32960 |
| Gadag | -37021 | -7578 |
| Dharwad | -31388 | 51201 |
| Bengaluru | -22726 | 2199426 |
| Raichur | 4326 | 11011 |
| Koppal | 12773 | 9159 |
| Bijapur | 55507 | 52404 |
| Gulbarga | 70627 | 87899 |
| Bellary | 98120 | 119165 |

Source: Calculated from Census of India, 2001 and 2011 and the Sample Registration System, Registrar General of India. Districts are as per demarcation in 2001.

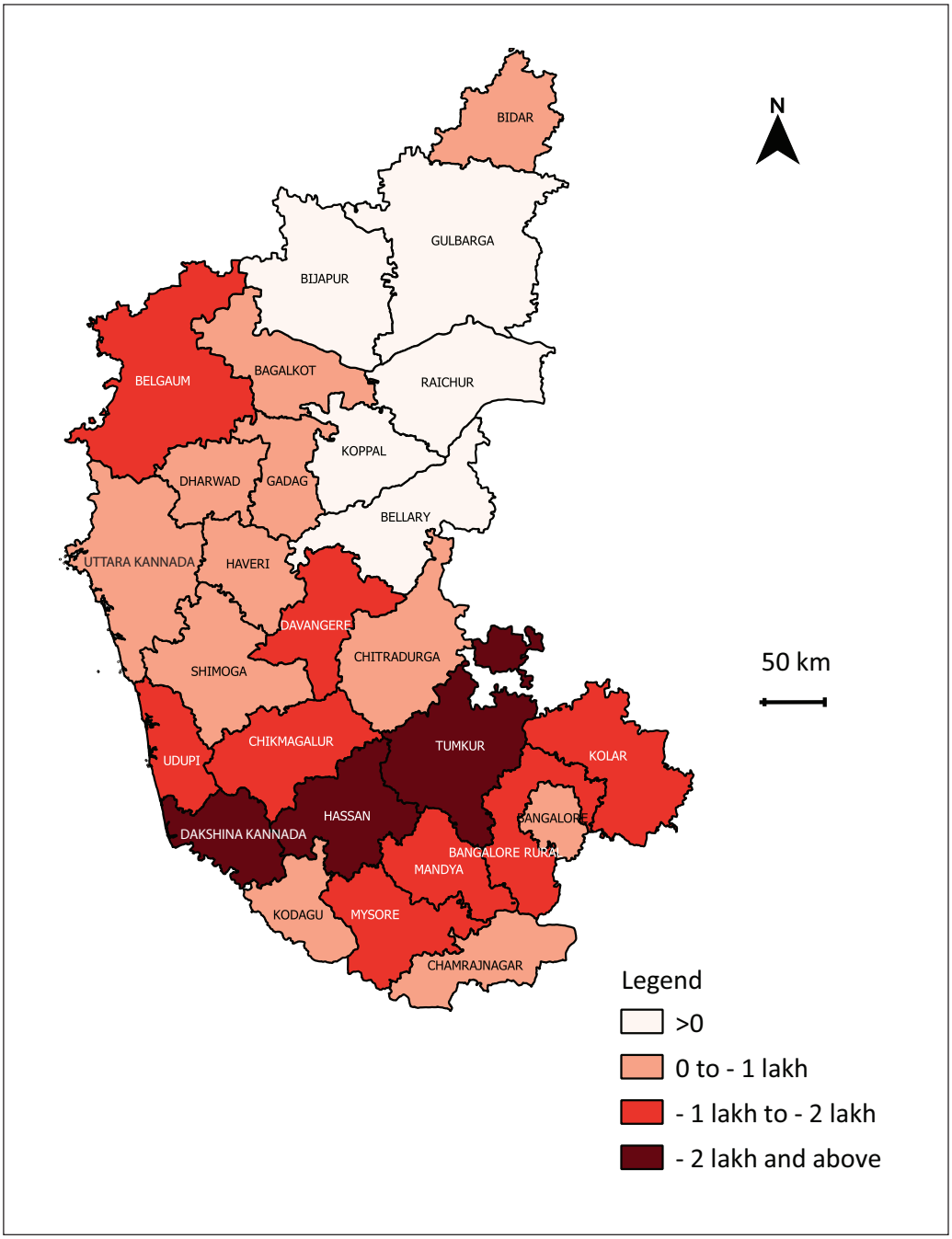
of growth would warrant is much more evident and quite significant. In 11 of the 27 2001-districts – Tumkur, Dakshina Kannada, Hassan, Mandya, Udupi, Kolar, Bengaluru Rural, Chikmagalur, Mysore, Davangere and Belgaum – the actual

population in 2011 falls short of the estimates based on natural growth by over 100,000 persons. In another eight districts – Shimoga, Chitradurga, Chamrajanagara, Uttara Kannada, Kodagu, Haveri, Bagalkot and Bidar – the actual figures fall short of the estimates by a margin of between 50,000 and 100,000 persons. Thus in 19 of the 22 districts where the actual numbers in 2011 are less than the estimates based on natural growth, the differences are not negligible.

A distinguishing feature of the widespread indication of population preferring to exit rural areas in the districts of Karnataka is the extent to which they fall into a larger regional pattern. If we classify the districts according to the extent to which their actual rural populations in 2011 were less than the projections based on RNI we can identify four clear groups: districts in which the actual rural population was greater than the projected figure, districts where the actual 2011 rural population was less than the projection by between 0 and 100,000 persons, districts where the difference was between 100,001 and 200,000 persons, and districts where the difference was more than 200,000 persons. What is striking is the extent to which the districts falling into each of these groups are contiguous. As can be seen from Map 2.1, the districts with the greatest estimated release of rural population – Tumkur, Hassan and Dakshina Kannada – form a belt cutting across the state from east to west. The next set of districts, in terms of the extent of estimated release of rural population, are largely ranged in contiguous areas on either side of this belt: Udupi, Chikmagalur and Davangere to the north of the belt and Mysore, Mandya, Ramanagara, Bengaluru Rural and Kolar to the south. The only non-contiguous district in this category is Belgaum.

The eleven districts where the difference is between zero and 100,000 are relatively more dispersed with five of these districts – Bidar, Bengaluru, Chamarajanagar, Kodagu and Chitradurga – not sharing the pattern of their neighbours. But the other six districts – Uttar Kannada, Shimoga, Haveri, Dharwad, Gadag and Bagalkot – are contiguous. The five districts where the actual rural population in 2011 is greater than the projections – Bellary, Koppal, Raichur, Bijapur and Gulbarga – are once again contiguous. The map also suggests that the tendency to leave rural areas is strongest in southern Karnataka. This tendency is more moderate in Northwest Karnataka. And Northeast Karnataka largely presents the opposite picture with the rural population tending to be greater than the projections.

Explaining these patterns would call for a larger analysis of the transformation of rural Karnataka than is the purpose of this chapter. But it is important to note that some of the instinctive expectations about this transformation need not be true. It is sometimes assumed, on the basis of the patterns seen in the Industrial Revolution in Europe, that the migration from rural to urban areas is essentially caused by severe distress in the countryside. But this




**Map 2.1: Estimates of decline in rural population in Karnataka**

contention does not stand closer statistical scrutiny. If the movement away from rural areas was being driven by poverty we would expect to find an inverse relationship between the per capita income of districts and the tendency to move out of rural areas. But the correlation coefficient between per capita income of districts and the extent to which the actual rural population in 2011 in the districts falls below the estimates based on RNI is 0.02, suggesting virtually no correlation between the two variables.

A more striking relationship emerges between literacy rates and the inclination to leave rural areas. This is evident if we group the districts according to the extent to which the actual rural population in 2011 is above or below the estimates based on RNI. Using the same cut-off points that we have used in Map 2.1, we can create four groups of districts: those where the actual rural population in 2011 is greater than the projected figure, those where the actual rural population in 2011 is less than the projected figure by less than 100,000 persons, those where the actual rural population in 2011 is less than the projected figure by between 100,001 and 200,000, and those where the actual rural population in 2011 is less than the projected figure by more than 200,000 persons. Table 2.3 tells us that literacy rates do in fact vary significantly between these groups.

**Table 2.3:Analysis of Variance of District Literacy Rates Across Groups of Districts Classified by the Difference Between Actual and Projected Population in Rural Areas**

| Variable | F ratio | Level of significance |
|---|---|---|
| Literacy | 6.241 | 1 per cent |

Source: Tabulated from data generated in Table 2.2 and Census of India, 2011.

A closer look at the nature of this variation also does not fully support the conventional wisdom of distress-led migration away from rural areas. Distress led migration would be consistent with a pattern of the regions with the lowest literacy rates seeing the greatest tendency to leave rural areas. This would have meant a positive relationship between the literacy

**Table 2.4: Literacy rates across groups of districts classified by the difference between actual and projected population in rural areas**

| Groups of districts | Average of district literacy rates |
|---|---|
| Districts where rural population is greater than RNI based projections | 63.47 |
| Districts where actual population is below projections by 100,000 persons or less | 76.10 |
| Districts where actual population is below projections by between 100,000 and 200,000 persons | 75.69 |
| Districts where actual population is below projections by more than 200,000 persons | 79.61 |

Source: Calculated from data generated in Table 2.2 and Census of India, 2011.

rates and the difference between the actual population and the projected population. But the correlation coefficient between these two variables is negative at – 0.42. Table 2.4 elaborates this picture telling us that the group of districts with the lowest level of literacy are least inclined to leave rural areas and the groups of districts with the highest literacy rates have the greatest tendency to leave rural areas. This pattern would be more consistent with the view that migration requires assets including literacy.

## Indicators of urban centres

The population that appears to be moving out of large parts of rural Karnataka have the option of moving to areas in other districts of the state, to other states and out of the country. By the same token there are urban centres in Karnataka that can attract persons from within the district, other districts in the state, other states and even expatriates from other countries. When we see the rural population in many districts of Karnataka not growing as rapidly as projected and some urban centres growing more rapidly than expected it is important to remember that both these trends are parts of processes that extend well beyond the state. But the extent to which a district is contributing to the overall process of urbanization can be captured by the extent to which it records either or both of these trends. Our search for centres of urbanization in Karnataka can then begin by classifying districts according to the extent to which the twin processes of persons moving out of rural areas and persons moving into urban centres are visible in them.

Just as has been done for rural areas we can get an indication of population moving in or out of urban areas by comparing 2011 actual populations with projections from 2001 based on the Rate of Natural Increase. The most striking result of this exercise is the widespread tendency for the actual 2011 populations to exceed the projections. In 21 of the 27 districts as demarcated in 2001 the urban areas have seen actual 2011 populations exceed the projections. But before we move into greater details of this process it would be prudent to note that this list includes the five districts – Bellary, Gulbarga, Bijapur, Koppal and Raichur – that also recorded an actual rural population in 2011 that was in excess of the projections based on the Rate of Natural Increase. In these districts it is difficult to rule out the possibility that the patterns of birth and death rates are different from the state averages underlying the RNI used in the calculations. It is also important to note that among these five districts Bellary records the greatest extent to which the actual figures exceed the projections in both urban and rural areas. Given the history of mining in this district it would be important to distinguish between trends in this district and the tendency towards larger, more broad-based, processes of urbanization. It may then be prudent to classify these five districts as a separate group marked by pressure in greater-than-projected populations in both urban and rural areas.

The urban areas of these districts are coming under increasing population pressure that is not accompanied by a relative easing of the pressure of population in their rural areas. We could refer to the urban areas of these five contiguous districts as the *districts of urban population pressure.*

When we focus our attention on the remaining 22 districts, as demarcated in 2001, it is difficult to ignore the possibility that some districts may in fact be deurbanizing. There are six districts – Kodagu, Gadag, Mandya, Chikmagalur, Uttar Kannada and Shimoga – where the actual urban population in 2011 is less than the estimates of the population based on natural growth. We could argue that the differences are not sharp enough to make a strong case that these districts are deurbanizing, particularly in the context of the common RNI that has been used in the calculation. But it does challenge the impression that all districts in Karnataka are necessarily urbanizing at a comparable pace. And these six districts are potentially ones that could be deurbanizing.

This is not to suggest that these districts are seeing a return to the rural. In these six districts the actual population is less than the estimates based on natural growth in rural areas as well. Indeed, in Chikmagalur the actual population in the district as a whole in 2011 is less than its population in 2001 without even taking its natural growth into account. These districts are likely to be seeing a migration of population from both their urban and rural areas. It is worth noting that two of these six districts, Chikmagalur and Kodagu, are plantation districts. The figures would suggest not only that the plantation sector is not able to support the natural growth in population but also that the urban centres in the plantation districts are not able to support the additional population either. This pattern could be wider as two more districts in the six – Shimoga and Uttar Kannada – have a significant presence of tree crops. The presence of Mandya in this list is a point of concern. It indicates that the leading light of the Green Revolution in Karnataka is no longer able to support the natural increase in its rural population. What is more, its urban centres far from being able to absorb the population from the rural areas are not able to provide for the natural increase in the district's urban population. It is in this sense that these six districts could be treated as *districts with a potential for de-urbanization*, where the relative decline of its urban centres cannot be ruled out.

The remaining 16 districts (as demarcated in 2001) show signs of urbanization in varying degrees. The criterion used to identify the districts with a potential for de-urbanization could be useful here as well. We could estimate the ability of the urban centres within the district to absorb the population that is seeking to move out of its rural areas. It would be useful to make a distinction between those districts that have the potential to absorb a substantial portion of the population being released from the rural areas of the district and those

that do not. We have taken the extent to which the actual rural population in 2011 is less than the estimates based on the Rate of Natural Increase as an indicator of the population moving out of the rural areas of that district. By the same token we have taken the extent to which the actual urban population in 2011 is greater than the estimates based on the Rate of Natural Increase as an indicator of the ability of the urban centres in the district to absorb additional population. The proportion of the indicator of urban centres absorbing additional population to the indicator of migration out of rural areas will give us an indication of the strength of urbanization in the district. But this cannot be the sole criterion. In districts where only small numbers are migrating out of the rural areas even a slow-growing urban centre may be able to absorb the entire set of rural migrants. We could then run the risk of treating the slow growing urban centre as a case of strong urbanization. It would thus be useful to add a criterion that captures the magnitude of urban growth. In our case we can take the extent to which the actual urban population in 2011 is greater than the RNI based estimates. We can then distinguish between the strongly urbanizing districts and those with relatively weak urbanization.

We then divide the 16 2001-districts that have not already been classified, into three sets: the rapidly urbanizing districts, the moderately urbanizing districts and the districts of weak urbanization. Those districts that are able to absorb more than 50 per cent of the migration from their rural areas and whose actual urban population in 2011 is at least 100,000 persons above the RNI estimates have been treated as *rapidly urbanizing districts*. Districts that are able to absorb more than 50 per cent of the migration from their rural areas and whose actual urban population in 2011 is at least 50,000 persons but less than 100,000 persons above the RNI estimates have been treated as *moderately urbanizing districts*. And those districts where the urban centres absorb less than 50 per cent of the migration from their rural areas and/or have an urban population that is less than 50,000 persons above the RNI estimates have been treated as *districts with weak urbanization*.

Bengaluru clearly heads the first category with its indicator of urban absorption being a whopping 9678 per cent of its rural migration. The other strongly urbanizing districts are Mysore, Dakshina Kannada and Udupi. The fact that these four 2001-districts meet the criteria for rapid urbanization must not lead us to underestimate the differences between them. As we shall see Bengaluru has to be treated as a separate entity in terms of its influence on Karnataka's urbanization. But when seen in terms of potential it is important to note that Mysore, Dakshina Kannada and Udupi are on the first steps of the ladder of rapid urbanization.

In identifying the districts with moderate potential for urbanization, we may need a minimal degree of flexibility. Three

districts – Dharwad, Bagalkot and Belgaum – meet the criteria for moderately urbanizing districts perfectly. Their urban areas absorb between 50 and 99 per cent of the estimates of those leaving rural areas and their actual urban population in 2011 was more than 50,000 persons above the RNI estimates. There is however a case to include Bengaluru Rural in this list. This district comfortably meets the criterion for the magnitude of increase of urban population but falls slightly short of the cut off for the proportion of rural population it can absorb. It absorbs 47 per cent of the population leaving its rural areas. Since this is not very much below the cut-off of 50 per cent, and we must make allowance for the attraction of the neighbouring Bengaluru metropolis, this district too has been added to the category of moderately urbanizing districts.

The eight 2001 districts that fall into our category of weak urbanization – Bidar, Kolar, Haveri, Chitradurga, Hassan, Davangere, Tumkur and Chamarajnagar – present a mixed picture in terms of their development history. Districts like Hassan have been known to have their share of agricultural and plantation success, while Chamarajnagar and Bidar have long been considered areas where the task of development is most challenging. In terms of our criteria of population leaving rural areas too there is considerable variation, from very high levels in Hassan to much more modest levels in Bidar.

This would leave us with a total of five categories of districts: districts of urban population pressure, districts with the possibility of de-urbanization, districts with weak urbanization, districts with moderate urbanization, and districts with strong urbanization. Since this classification has had to use data from 2001 it has necessarily been based on the districts as they existed in 2001. We can now return to the 30 districts of 2011 with the assumption that the trends towards urbanization in the combined district would be valid for the divided districts as well. That is to say the categorization for Bengaluru Rural is relevant for Ramanagara as well; that for Kolar is relevant for Chikballapura as well; and that for Gulbarga is relevant for Yadgir as well. Table 2.5 gives us the list of these districts.

As is to be expected the five categories of urbanization have a strong location dimension to them. The location of these groups of districts is not unrelated to the pattern noticed earlier in the rural areas. The five 2001 districts that were seeing an increase in rural and urban population are, by definition, the six 2011 districts of urban population pressure. The location of the centres of urbanization too is consistent with broad patterns that we noticed in Map 2.1. We saw in that map that the tendency to leave rural areas was concentrated in the southern part of the state. Map 2.2 tells us that the areas attracting this population that is being released from the rural areas are primarily Bengaluru, Mysore and the contiguous districts of

**Table 2.5: Districts in Karnataka by the nature of urbanization**

| Category | Districts |
|---|---|
| Districts of urban population pressure | Bellary, Gulbarga, Yadgir,Bijapur, Koppal and Raichur |
| Districts with the possibility of de-urbanization | Mandya, Chikmagalur, Shimoga, Uttar Kannada, Kodagu and Gadag |
| Districts with weak urbanization | Bidar, Kolar, Chikballapura, Haveri, Chitradurga, Hassan, Davangere, Tumkur and Chamarajnagar |
| Districts with moderate urbanization | Dharwad, Bagalkot, Belgaum, Ramnagara and Bengaluru Rural |
| Districts with strong urbanization | Bengaluru, Mysore, Dakshina Kannada and Udupi |

Dakshina Kannada and Udupi, all districts located in the southern half of the state.

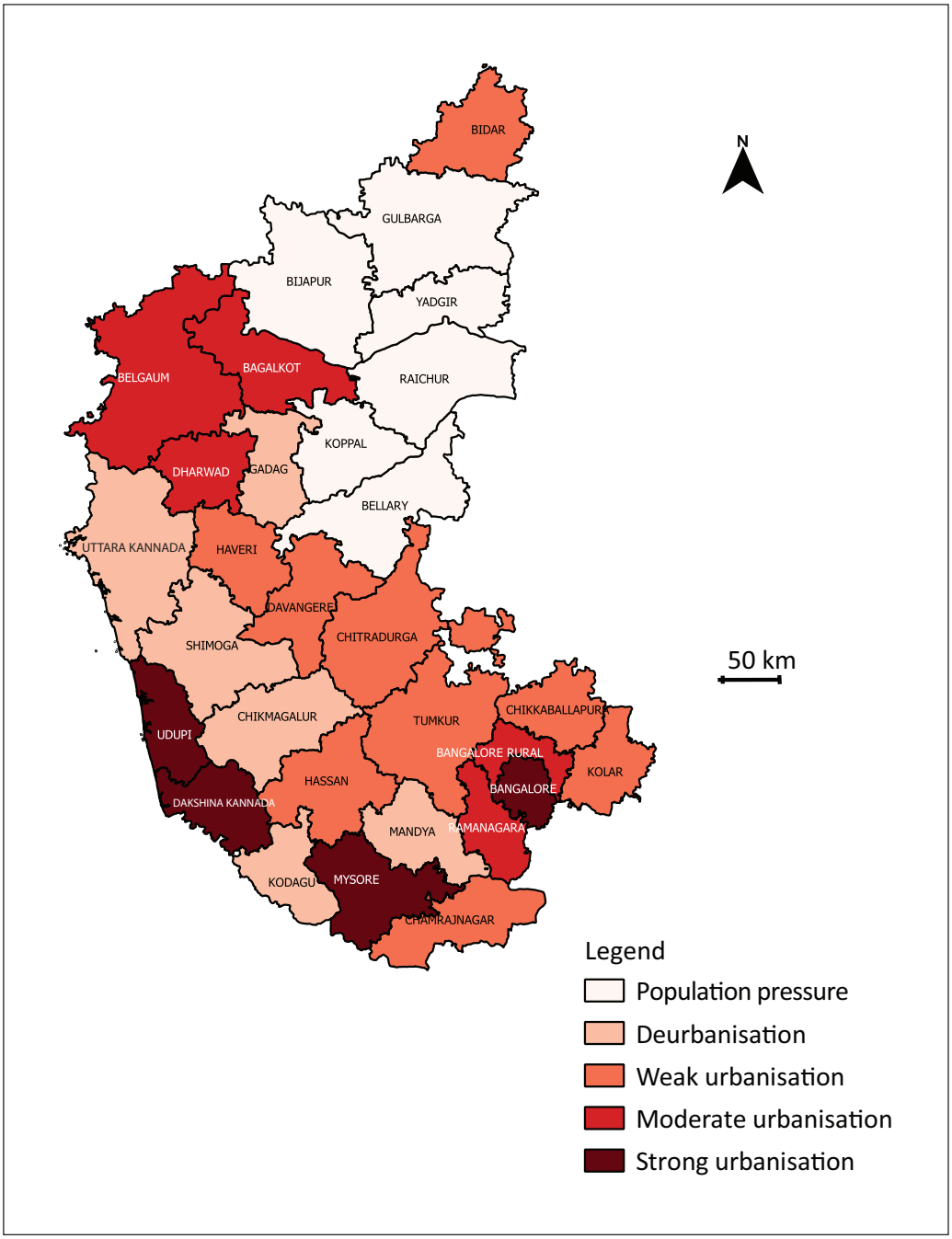
The moderately urbanizing districts surrounding Bengaluru are also tapping the population being released from the rural areas in the south of the state. The main moderately urbanizing region is in one contiguous set of districts – Belgaum, Bagalkot and Dharwad – to the northwest of the state. For those seeking a wider spread of urbanization in Karnataka, this is a promising trend.

As is perhaps to be expected each of these regions also show very distinct levels of both income and literacy. Table 2.6 tells us that the variation of both literacy and income between these categories is significant at the 1 per cent level. Equally predictably, as can be seen in table 2.7, the districts with strong urbanization have a significantly higher literacy rate than all the other categories. Again the average of the per capita incomes of the districts with strong urbanization is more than double that of the districts with urban population pressure and the districts with weak urbanization. What is worth noting is that the average of the per capita incomes of the districts with weak urbanization is less than that of the districts with urban population pressure. The income of the districts with weak urbanization is also substantially lower than that of the districts with the possibility of de-urbanization. This last fact strengthens the view that those moving out of their districts require the income levels that are needed to enable them to find greener pastures.

**Table 2.6: Analysis of variance of income and literacy across different categories of urbanization**

| Variable | F ratio | Level of significance |
|---|---|---|
| Literacy | 9.49 | 1 per cent |
| Per Capita income (₹) 2008-09 | 4.88 | 1 per cent |

Source: Calculated from data generated in Table 2.2 and Census of India, 2011.




Map 2.2 : Degrees of urbanisation in Karnataka

## Distribution of urban population

It should be evident from the five categories we have defined in the process of urbanization that the spread of this process is not uniform across the state. Table 2.8 tells us that the districts with strong urbanization accounted for 48 per cent of Karnataka's urban population in 2011 while districts with the possibility of de-urbanization accounted for less than nine per cent. This picture however includes the distortions caused by the fact that the number and size of the districts varies across categories. It is also a summary figure for the changes in urbanization that have taken place over the years. To get a more dynamic picture of the process of urbanization it might be more useful to look at the distribution of the additions to urban population between 2001 and 2011. A comparison of these figures with those of the overall proportions will give us an idea of the direction in which each category is moving in terms of their contribution to fresh urbanization.

**Table 2.7: Literacy and per capita income across categories of urbanization**

| Category | Average literacy rate of districts % | Average per capita income of districts in 2008-09 (₹) |
|---|---|---|
| Districts of urban population pressure | 63.47 | 32964.67 |
| Districts with the possibility of de-urbanization | 78.60 | 38533.17 |
| Districts with weak urbanization | 72.72 | 29749.33 |
| Districts with moderate urbanization | 74.22 | 42722.40 |
| Districts with strong urbanization | 83.99 | 72796.50 |

Source: Census of India (2011) and Karnataka at a Glance 2010-11, Directorate of Economics and Statistics, Bengaluru.

**Table 2.8: Distribution of urban population**

| Category | Percentage of Karnataka's urban population in 2011 | Percentage of addition to Karnataka's urban population between 2001 and 2011 |
|---|---|---|
| Districts of urban population pressure | 13.55 | 11.03 |
| Districts with the possibility of de-urbanization | 8.70 | 3.01 |
| Districts with weak urbanization | 15.50 | 10.82 |
| Districts with moderate urbanization | 14.40 | 10.92 |
| Districts with strong urbanization | 47.86 | 64.21 |
| Of which Bengaluru | 36.98 | 52.70 |

Source: Calculated from Census of India, 2011.

The broad pattern that emerges is one of an urbanization that is highly concentrated in a few pockets of the state, particularly Bengaluru. The districts with strong urbanization which already came up to nearly 48 per cent of the urban population in Karnataka, accounted for 64 per cent of the increase in urban population between 2001 and 2011. And within this group too the dominance of Bengaluru is very evident. The urban population of Bengaluru district accounted for 37 per cent of the state's urban population in 2011, and its share of the increase in urban population in Karnataka between 2001 and 2011 was 53 per cent. As a corollary the districts with the possibility of de-urbanization that accounted for under nine per cent of Karnataka's urban population in 2011, saw their share of the increase in urban population dropping to just three per cent. The districts under urban population pressure, those with weak urbanization, and those with moderate urbanization all saw their share of the increase in urban population between 2001 and 2011 dropping below their share of the overall urban population in 2011. The picture of the urban processes in Karnataka that clearly emerges then is one of Bengaluru-centric urbanization.

## Implications for JnNURM

The patterns of urbanization in Karnataka have at least three implications for the working of JnNURM in the state. First, the identification of the cities that can be engines of growth cannot be confined to those that have already been on the growth path for a while. The process of urbanization is likely to get an equal, or greater, benefit by also focusing on cities that have demonstrated a potential for emerging as engines of growth. A prime candidate for this position in Karnataka is Mangalore and its surrounding areas. Indeed, in terms of the general availability of workers seeking to move out of the rural, the catchment area for a Mangalore-based urbanization would extend through to the entire Dakshina Kannada district as well as Udipi. The data generated from the NIAS survey also suggests that the towns around Mangalore may also have the potential to contribute capital to the effort. Mulki, near Mangalore, has eight per cent of its population in the highest asset class. This level is only a little less than the 9.3 per cent recorded by Mysore and well above the two per cent of Nanjangud near Mysore.

The choice of engines of growth must also pay attention to Karnataka's problem of being excessively dependent on Bengaluru. In addition to supporting alternative engines of growth with strong potential, like Mangalore, there may also be a case to support the process of urbanization in the contiguous districts of Dharwad, Belgaum and Bagalkot. Since the current trends in these districts only suggest moderate tendencies to urbanization, developing this engine of growth would require a more broad-based effort. It would

need to not only improve conditions in the cities to make them more attractive to capital, but would also have to improve education levels in rural areas to encourage rural labour to seek urban opportunities.

In developing engines of growth JnNURM would also have to be more open to dramatically different strategies for each centre of urbanization. The nature of landholding around Mangalore is such that households are widely dispersed. Given the fact that as much as 82 per cent of individuals stay in their own houses – more than twice the corresponding percentage in Bengaluru – they may be less inclined to move into a crowded city. But it should be possible to mobilize this workforce for an effective engine of growth through a strategy that lays greater stress on mobility. The nature of the engines of growth would then need to vary with some of them being more sensitive to mobility than others. Similarly, the nature of the environment could also affect other choices in the process of urbanization. As Table 2.9 tells us, a fifth of the households in Mangalore continue to use firewood as their main source of energy for cooking, though the city is otherwise much more open to modern practices.

The patterns of urbanization in Karnataka also throw up another issue that is at the heart of JnNURM. It is clear that not all towns and cities can become engines of growth. There are towns that are no more than facilitators of the process of urbanization. This role could take various forms. The towns could be points of transit for people from rural areas seeking urban futures. They could have a longer-term role of providing the education facilities that are needed to seek better urban opportunities. It could be argued that Mandya is playing this role for villages that have benefitted from the Green Revolution. The needs of these towns are very different from most engines of growth.

**Table 2.9: Features of selected cities and towns in Karnataka**

In per cent

| TOWN | Proportion of houses with no toilet inside | Proportion of households where firewood is main energy source for cooking | Proportion of households in highest asset class | Proportion of households living in their own house |
|---|---|---|---|---|
| Bengaluru | 3.0 | 2.9 | 10.2 | 40.4 |
| Dharwad | 1.5 | 7.1 | 8.6 | 65.2 |
| Gulbarga | 23.1 | 18.5 | 3.0 | 70.3 |
| Mangalore | 0.7 | 20.0 | 11.3 | 82.0 |
| Mulki | 0.0 | 22.0 | 8.0 | 94.0 |
| Mysore | 2.0 | 3.1 | 9.3 | 67.3 |
| Nanjangud | 2.0 | 0.0 | 2.0 | 70.0 |
| Shahbad | 44.0 | 24.0 | 0.0 | 56.0 |

Source: NIAS Survey 2013

These towns may need to emphasize education infrastructure much more than infrastructure that attracts manufacturing investment.

There is also the question of what is to be done about towns and cities that are way down in terms of the quality of life. As Table 2.9 informs us, 23 per cent of the households in Gulbarga do not have a toilet inside the house and this number goes up to as much as 44 per cent in Shahbad. In terms of human development providing basic facilities to the entire population of such towns is at least as much a necessity of the process of urbanization as the need to provide world class infrastructure to the major cities. This requires a focus not just on the poor within the cities as the BSUP component of JnNURM does, but also alternative strategies for cities that are at the bottom of the human development scale.

3

# The City Development Plans

The City Development Plan (CDP) is at the core of JnNURM, providing the framework in which projects are identified and prioritized. Any city that seeks to avail financial assistance under the Mission needs to prepare a CDP and get it approved. The CDP is supposed to be a six year policy and investment plan that has to be designed to articulate a vision of how the city will grow. Thus CDPs had to be prepared for both Bengaluru and Mysore. In reality two CDPs were prepared for Bengaluru, one in 2006 and a revised one in 2009. The first CDP was approved by the Ministry of Urban Development, Government of India in 2006. However there was a change in the governance structure as a result of the formation of the Bruhat Bengaluru Mahanagara Palike (BBMP) along with the addition of 110 villages to the city area in 2007. As a result, the CDP was revised to incorporate this change and provide an update of the investment plan based on the inclusion of the new areas under the jurisdiction of BBMP. In this report, unless stated otherwise, the CDP for Bengaluru refers to the one revised in 2009.

Consultants had a major role to play in the making of the CDPs. The mandate for the consultants from the Urban Local Bodies was to project the population of the Bengaluru and Mysore, and provide capital investment plans for projects in these cities. The consultants held stakeholders meetings for a group of wards in the city that included citizen groups, NGOs, and elected representatives from these wards. The consultants also collected data through a questionnaire survey on sectors such as water supply and sewerage. The systematic manner in which the opinion of various stakeholders was collected did not however always translate into significant contributions to the making of the CDP. The consultants felt that most of the issues raised in the stakeholder meetings were individual issues which were

not very useful with respect to their mandate. At the same time a view was also expressed in official circles that since the consultants were not local they could not adequately capture the finer details of the city. The exercise did however lead to CDPs that, by and large, met the stated requirements of the JnNURM toolkit.

An evaluation of a CDP would use the benefit of hindsight to compare the projections of the CDP with the reality that has emerged. The CDP for Bengaluru as revised in 2009 does not do particularly well in this regard. In projecting the growth of Bengaluru's population the CDP first considers the growth of the core Bengaluru Mahanagara Palike area and the CMCs that were added to it separately. It then estimates that if existing trends continue the city (the core BMP area and the CMCs together) will reach a population of 98.15 lakhs by 2011.[1] The CDP however goes on to argue that Bengaluru cannot maintain its growth rate. It states that "there is a likely saturation of the current space dedicated to urbanization. . .This stress is already leading to a trend in economic investment moving to Tier-II cities, such as Mysore."[2] It thus projected the 2011 population of Bengaluru to be just 80.15 lakhs.

As we have seen in the previous chapter the expectation that Bengaluru would lose some of its population growth to other cities has been belied. Karnataka's sole metropolis accounts for an increasing share of the additional urban population. The general economic slowdown may have prevented it from reaching the extrapolations based on earlier growth, but the 2011 Census provisional figure of the population of BBMP is, at 84.44 lakhs, more than 5 per cent greater than the estimates used in the CDP. And since the projected population of the CDP was"used as the basis for service assessment and delivery for all infrastructure sectors considered in the subsequent sections,"[3] the underestimation was transferred to the rest of the Plan.

If the population of Bengaluru has been underestimated in its CDP, the opposite is the case with Mysore. The CDP for Mysore had projected various levels of population according to the growth rate the city was likely to achieve. As per these projections the population of Karnataka's second most populous city would be 10.1 lakhs in 2010 even if the city grew at what the CDP referred to as the base rate, with the population expected to reach 12.2 lakhs in the same year if the city achieved a high growth rate. The reality, the Census of India 2011 tells us, is that a year after the year for which projections were made the population was just 9.2 lakhs, nearly 9 per

[1] Jawaharlal Nehru National Urban Renewal Mission,Revised City Development Plan, Bengaluru 2009, Vol I, p 57.

[2] Revised City Development Plan, Bengaluru, 2009, Vol I, p 58

[3] *Revised City Development Plan, Bengaluru, 2009*, Vol I, p 58

cent below the expected levels. With the projections for both Bengaluru and Mysore being significantly off the mark, and in opposite directions, it would not be particularly useful to lay much emphasis on a mechanical comparison of the projected figures with the reality that has emerged.

The value of a CDP is however not limited to its precise projections. JnNURM in fact treats the CDP as being much more than the earlier Master Plans which were concerned primarily with land use. JnNURM's revised toolkit points out that a "City Development Plan is a comprehensive document outlining the vision and development strategy for future development of the city."[4] It is important then to look beyond the precise estimates to the overall approach to urban development that is reflected in the CDP. And the Revised City Development Plan for Bengaluru of 2009 points to at least four issues that need to be addressed when preparing future plans for the city: what constitutes the city; how we mangage the city's growth; how we protect the vulnerable; and how we generate and manage resources.

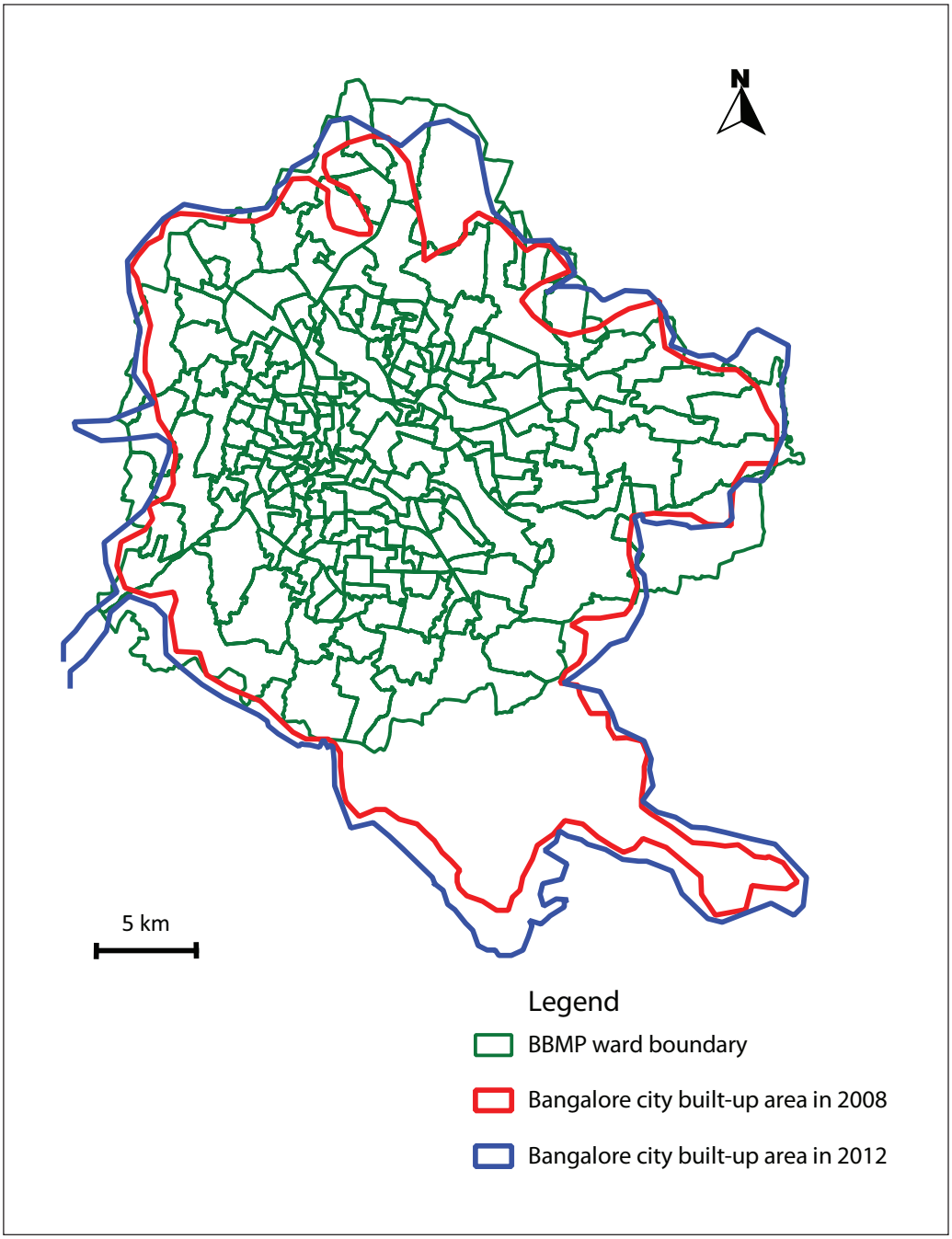
## What constitutes the city?

In laying out the city profile as the basis for its plan, the CDP identifies Bengaluru with the administrative area of the Bruhat Bengaluru Mahanagara Palike. As the CDP notes, "BBMP was formed in 2007, by amalgamating the erstwhile Bengaluru Mahanagara Palike (BMP), surrounding eight smaller urban local bodies and110 villages."[5]A city is however not just an administrative entity; it also has its economic, social and political dimensions. Indeed, JnNURM provides a prominent place for the economic dimension by emphasizing the role of a city as an engine of growth, if not consisting of multiple engines of growth. The boundaries of these other dimensions of a city are arguably better captured by the extent of its built-up area. These boundaries will give us an idea of the magnitude and direction of the city's growth. To the extent that the administration is designed to meet the requirements of the entire urban entity, the administrative boundaries should not be too different from the boundaries that emerge by tracing the outer limits of the built up space.

In Bengaluru's case, however, these two boundaries do not match. The outer boundary of the built up space of Bengaluru can be drawn using satellite imagery. We can then superimpose this boundary on the ward map of BBMP. Map 3.1 carries out this exercise using satellite imagery for 2008 the year after the creation of BBMP. The

[4] Jawaharlal Nehru National Urban Renewal Mission, Sub-Mission for Urban Infrastructure and Governance, Revised Toolkit for Preparation of City Development Plan, Ministry of Urban Development, Government of India

[5] *Revised City Development Plan, Bengaluru, 2009, Vol I, p11*




Map 3.1: BBMP ward map and the outer boundary of Bengaluru's built up space

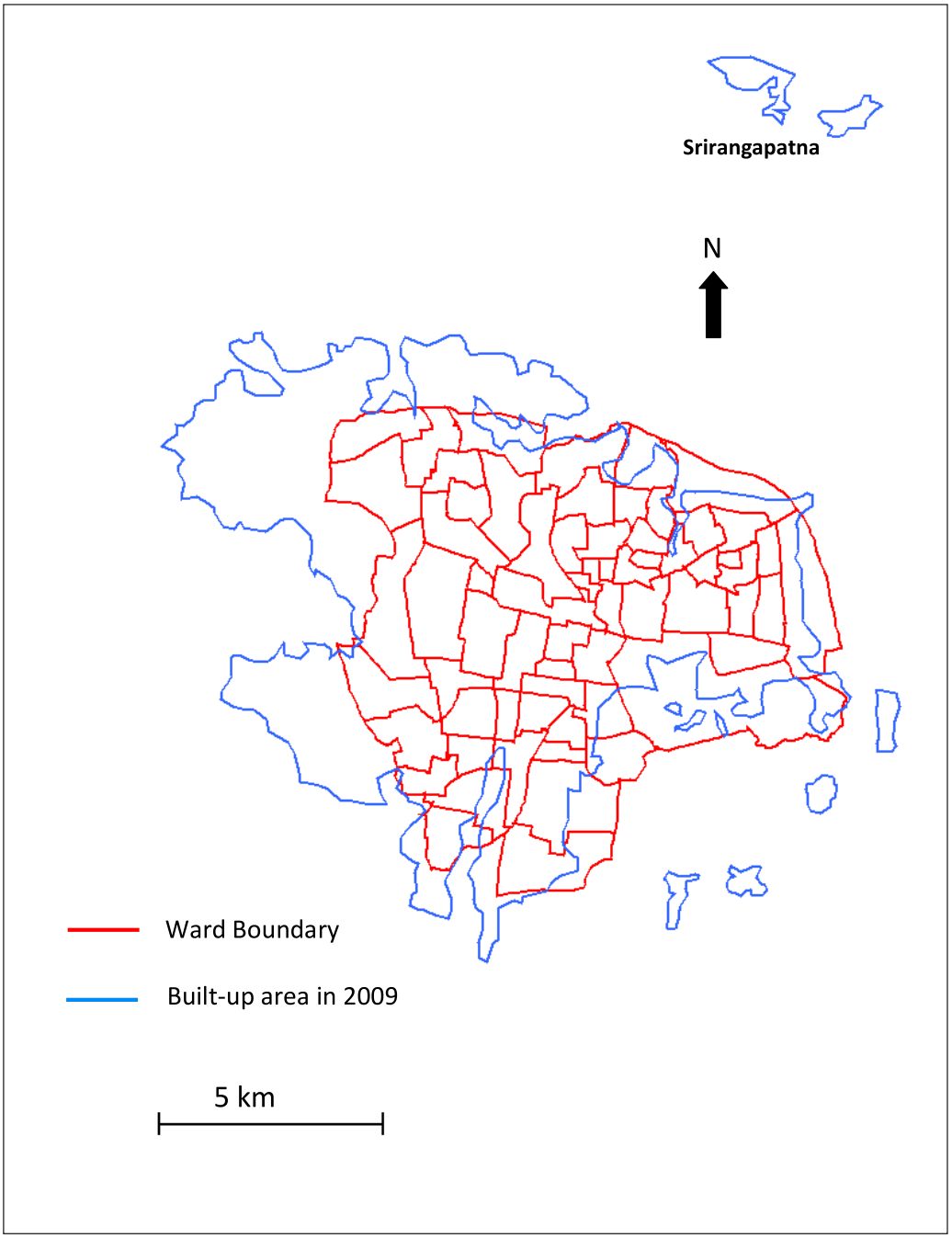
map makes it clear that there is a mismatch both in terms of areas that the city has apparently not yet reached being included in the Pallike, as well as of substantial parts of the city being left out. A significant portion of several wards, like Varthur, do not show signs in the satellite imagery of being a part of the expansion of Bengaluru's built-up space. And there are such areas to the north and the east of the city, and to a lesser extent to the west. The inclusion of areas that the city has not yet reached is perhaps to be expected once the BBMP area was defined to include 110 villages. It could be argued that the inclusion of these areas is not a serious shortcoming. It could be seen as an attempt to be prepared for the city when it reaches these villages.

What is more significant is the large part of the built up area to the southeast of the Bengaluru that does not come within the administrative boundaries of the BBMP. And leaving out this particular part of Bengaluru from the BBMP, and hence the boundaries the CDP works with, is particularly significant because of its implications for Bengaluru's engines of growth. The southeast part of Bengaluru that falls outside the BBMP limits houses a significant portion of the city's information technology and biotechnology industries. These sectors have been among the more substantial engines of Bengaluru's growth since the mid-1980s. An effective CDP would have tried to link the city's development to the potential growth of these sectors. It would have, for instance, ensured there was adequate housing close to this part of the city so that the commute from home to work does not place a more-than-necessary strain on the city's transport system. But with a major engine of growth outside its administrative boundaries the CDP itself has tended to play down the potential of this sector. The CDP notes that the growth of the IT corridor "is concentrated in the southeast quadrant, with some spill over into the northeast quadrant. This scenario depends on the fact that growth will be concentrated in a pattern that reflects the current spread of the IT Industry. However, given the fact that there are attractors elsewhere – north for the new airport, and southwest for the Bengaluru-Mysore axis, this may not be [a] very probable scenario."[6]

The projected growth scenarios did not prove to be entirely accurate, as is evident from Map 3.1. As was to be expected during a time of a global slowdown that hurt several of the city's industries, Bengaluru's growth, as seen through the outer limits of its built up space, between 2008 and 2012 was very limited. But a part of this limited growth was found in the Information Technology industry-led south east quadrant as well.

The challenge of defining boundaries in Mysore is no less complex. As in the

[6] *Revised City Development Plan, Bengaluru, 2009*, Vol I, p 52




Map 3.2: The wards and outer boundaries of Mysore in 2009

case of Bengaluru, the outer boundaries of Mysore as defined by its built up space is not consistent with boundaries defined by the map of its wards. As Map 3.2 tells us, there are large areas of Mysore's built up space to the west of the city that lie outside the limits marked by its wards. There are also areas to the southeast of the city that are within the limits marked by the wards of the city, but are outside the boundaries drawn by the built-up area of the city. Defining the economic boundaries of the city is also not without its ambiguities. If, as is often done, heritage is seen as an important part of the city and its economy, the boundaries of the city would have to be extended further. The heritage potential is not confined to the limits of the city defined either by its wards or by its built-up space. From a tourism perspective it is usually linked to the other nearby heritage centre, Srirangapatna. As the two centres can easily be covered in a day working out a common strategy for them would have its economic value. The CDP of Mysore provides a prominent place for the heritage of the city. It however confines itself to Mysore city alone. In the process it loses the synergy that could be found by planning for the compact circuit of Mysore and Srirangapatna. In Mysore's case too the economic boundaries and the administrative boundaries do not match.

## How do we manage the city's growth?

A common theme when planning for Bengaluru's growth has been that setting up satellite towns will release at least some of the pressure on Karnataka's sole metropolis. It is not entirely surprising then that a strategically significant component of the CDP is the emphasis it lays on the development of satellite towns that involve the "design of smaller towns governed under different municipalities that are adjacent to a major city which is the core of the metropolitan area."[7] These satellite towns are expected to be self-sufficient communities – with work, live and play spaces – that can make use of their connection to the centre of the metropolitan area. The five major towns that are being taken up by the Bengaluru Metropolitan Region Development Authority are Bidadi, Ramanagara, Sathanur, Solur, and Nandagudi. In addition the CDP notes that the "private sector is also in the process of planning and developing large, self-sufficient townships, particularly along the Bengaluru-Mysore corridor."[8]

The CDP does not however pay any attention to Bengaluru's historical experience with satellite townships. The public sector townships, which had their own local institutions like the HAL Sanitary Board, did have considerable success. They created effective work, live and play islands

[7] *Revised City Development Plan, Bengaluru, 2009*, Vol I, p 53
[8] *Revised City Development Plan, Bengaluru, 2009*, Vol I, p 56

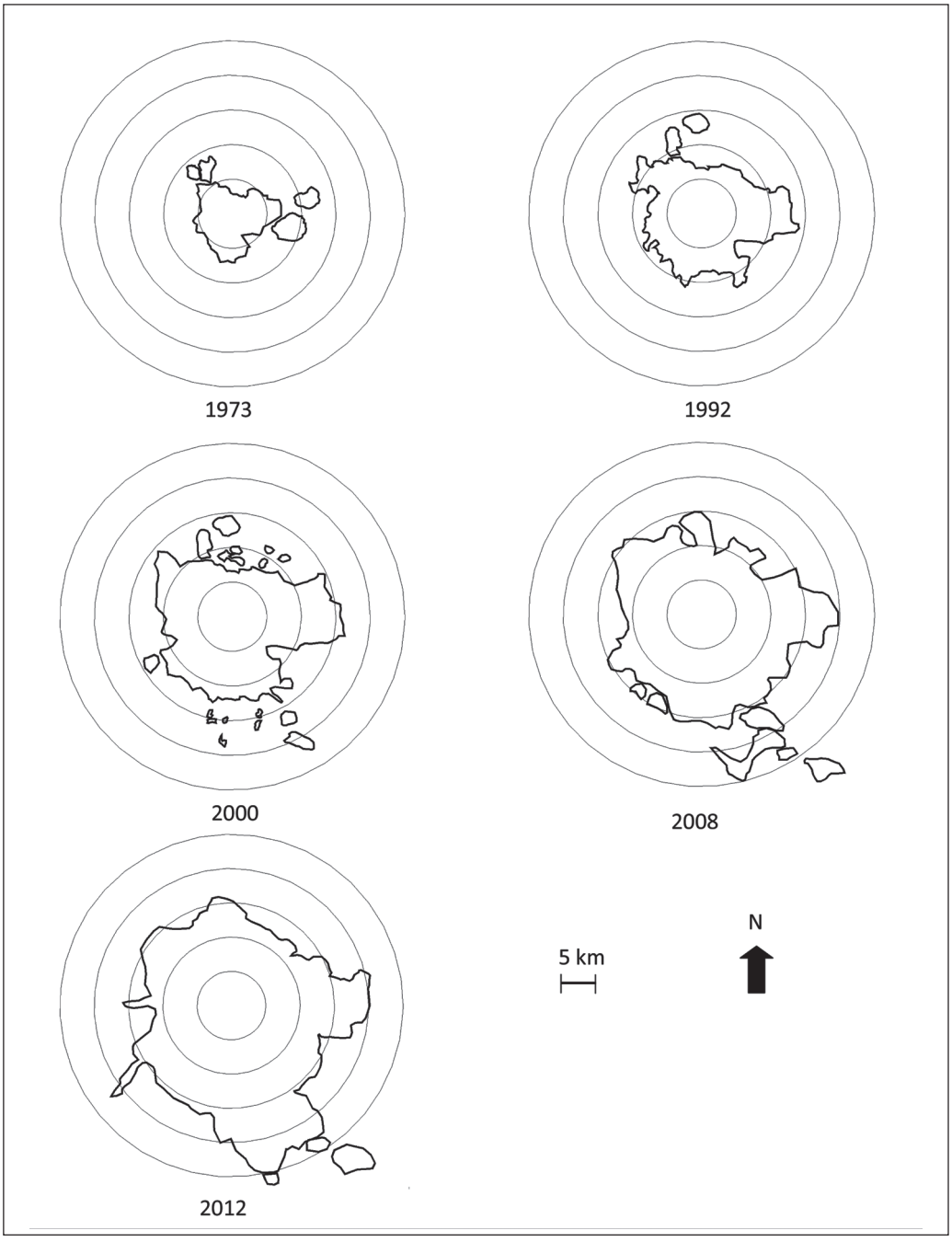
to the north and east of Bengaluru. In a national ethos dominated by the public sector several of these units claimed significant roles in Indian post-independence industrialization. The living spaces provided the education and health facilities that helped the children of public sector workers to emerge as trained technologically advanced manpower. These institutions also dominated Bengaluru's sporting, especially soccer, environment. And by using their own network of buses they placed a relatively limited strain on Bengaluru's transport facilities.

At the heart of this success was production activity. The areas of production were well funded and seen as being a part of India's effort to catch up with the rest of the world, especially in terms of technology. The townships thus had both the resources and the status to build around their workplace. With the benefits of unionization the townships were also able to attract scientific and other manpower from all over the country.

In contrast the CDP's advocacy of satellite townships does not provide the same central role for the workplace. While there is a mention that individual satellite townships could house certain industries, there is little exploration of how that investment is to be made. The long list of requirements for the developer emphasizes the making of physical amenities from roads to housing. There is very little on why investors should come to that particular township. The strategy would appear to be to first create the township and then hope to attract the appropriate industry.

This approach is also reflected in listing housing as one of the economic activities around which a township could be built. The idea would then seem to include purely residential townships. Indeed, the private townships on the Bengaluru-Mysore corridor that the CDP refers to are essentially extended gated communities.

Bengaluru's experience with the development of primarily residential satellite townships has not been very encouraging. Typically these satellite towns do not take off until the city expands to meet them. This pattern was noticed when Kengeri satellite town was created. The private townships created since then have seen a similar pattern. Map 3.3 uses satellite imagery to capture the pockets of built-up spaces within the outer boundaries of Bengaluru that were recorded in the earlier map in this chapter. And the pattern that clearly emerges is one of a built-up area being created a short distance from the city, and then the city grows to occupy the area between the new built-up area and the city. The 1973 picture captures the process of the area between the public sector townships and the city being occupied through urbanization. By 1992 a new pocket emerged around Yelahanka to the north of the city. By 2000, after the IT boom took off a further set of new pockets emerged to the southeast of the city. The period from 2000 to 2008 sees many of these pockets being absorbed into the city, a process that sees a further consolidation, particularly in the




Map 3.3: Built up spaces in Bengaluru

southeast between 2008 and 2012. Bengaluru has thus tended to grow by the emergence of pockets a little away from the city, prompted by, among other things, the availability of land at affordable prices. But these new pockets do not develop into self-contained satellite towns. Instead they become points towards which the city grows. Many of the gated communities that are coming up on the Bengaluru-Mysore corridor may just be investments in areas that Bengaluru is expected to reach, rather than potential satellite townships.

## How do we protect the vulnerable?

The process of urbanization makes several groups vulnerable, with the poor having the least resources to protect themselves against the uncertainties of change. An effective strategy for urbanization would ensure the basic needs of the poor are addressed. JnNURM is acutely aware of this task as is evident in the Basic Services to the Urban Poor component of the Mission. The process through which it identifies the poor is however not beyond dispute. The documents of the Mission reflect an underlying belief that the poor in a city can be identified with its slums. The toolkit for the CDP after its second revision states, "The key issues pertaining to Basic Services for Urban Poor is lack of basic infrastructure facilities *in slums* like inadequate access to sanitation facilities, water supply (public stand posts), dearth of access to health, education and other social infrastructure facilities" [Emphasis added].[9] Having effectively defined the poor as those living in slums, the main thrust of the Basic Services to the Urban Poor component in the Mission cities and the Integrated Housing and Slum Development Programme in the other towns is on housing for slum dwellers.

In order to evaluate this identification of the poor with slums we first developed an indicator based on whether or not the household in our survey owned particular assets.[10] In deciding the weights for each asset in the indicator market prices were used to answer a simple question: What would be the minimum economic value a household could claim if it owned that asset? The weight for a particular asset was then the proportion of its economic value to the sum of the economic values of all the chosen assets. The indicator was calculated from data collected from five cities – Bengaluru, Mysore,

[9] JnNURM, Toolkit for Preparation of City Development Plan, Sub-Mission for Urban Infrastructure and Governance, April 2013, Second Revision, Ministry of Urban Development, Government of India, p 50.

[10] The indicator was constructed by first asking whether and how many of the following nine assets the household owned: cycle, geyser, cell phone, radio, colour TV, computer, refrigerator, two-wheeler and car. The weight given for each of these assets was cycle=0.3695, geyser=0.7391, cell phone=0.2094, radio=0.1231, colour TV=0.9855, computer=2.4639, refrigerator=1.4783, two-wheeler (motor cycle and scooter)= 7.3918, car= 36.9594. The asset indicators were classified in the following order: 1 = 0 to 1.40; 2 = 1.41 to 5.00; 3 = 5.01 to 9.50; 4=9.51 to 13.00; 5 = 13.01 to 40.00; 6= Above 40

Mangalore, Hubli-Dharwad and Gulbarga – and three towns – Nanjangud, Mulki and Shahbad. The indicator was arranged from the lowest to the highest for all the cities and towns together. The indicator for the 20th, 40th, 60th, and 80th percentiles were taken as the cut off points to define asset classes. The top fifth was then further divided to create a sixth class. This division was to separate those households whose indicator score would allow them to own a car and a few other assets. This sixth class was treated as the highest in the asset score. Clearly this indicator is not designed to capture the rich or the super-rich. But since the focus of the BSUP and the IHSDP was to be on the poor it was deliberately decided to choose a measure that is more sensitive to capturing variations among the poor and the middle classes rather than the rich. We then treated all those belonging to category 1, roughly corresponding to the bottom 20 per cent of the population as the poor. For the specific purpose of identifying where the poor stay we further broke up the category of poor to create a group of the very poor, which roughly corresponded to the bottom 5 per cent of our sample.

The most striking result of this exercise is that slums are far from being the only places where the poor reside. As can be seen from Table 3.1 less than 30 per cent of the very poor in Bengaluru live in slums, and slums account for the residence of less than 14 per cent of the other poor. A fairly significant number of the poor live in villages that have been engulfed by the city. And over three-fourths of all of Bengaluru's poor live outside slums. The pattern in Mysore is equally interesting. The city is well on its

**Table 3.1: Distribution of poor households by place of residence**

In per cent

| | Bengaluru | | | Mysore | |
|---|---|---|---|---|---|
| | Other areas | Slums | Urban villages | Other areas | Slums |
| Very poor | 63.2 | 29.2 | 7.5 | 100.0 | 0.0 |
| Other poor | 79.8 | 13.9 | 6.3 | 90.6 | 9.4 |
| All poor | 75.7 | 17.7 | 6.6 | 92.5 | 7.5 |

Source: NIAS Survey, 2013

**Table 3.2: Distribution of population living in slums by asset class**

In per cent

| | Asset class 1 | Asset class 2 | Asset class 3 | Asset class 4 | Asset class 5 | Asset class 6 |
|---|---|---|---|---|---|---|
| Bengaluru | 50.0 | 28.0 | 8.7 | 11.3 | 2.0 | 0.0 |
| Mysore | 12.0 | 26.0 | 52.0 | 8.0 | 2.0 | 0.0 |

Source: NIAS Survey, 2013

Note: Asset classes are numbered from the poorest to the richest. Asset Class 1 corresponds to the All Poor category in the previous table.

way to becoming slum free. But this only means the poor have to live elsewhere.

The slums may not always be the worst place for the poor to live. The slums also seem to attract those who do not fall into the asset class which we have identified as the poor. Table 3.2 tell us that only half the households of slums in Bengaluru fall in that category. And the number in Mysore is only 12 per cent. The rest belong to higher classes going all the way up to Asset Class 5.

One of the reasons why those who are not among the poorest would stay in slums could be the high cost of housing in other areas of the city, particularly in Bengaluru. Slums may be the only houses those not too far away from being poor can afford. Even among the poor households, slums are the areas where they have a better chance of owning a house, particularly in Bengaluru. As per Table 3.3 in that city 57 per cent of the poor households that live in slums claim ownership of their houses. In contrast, 81 per cent of the poor living in 'other areas' live in rented houses. Even in Bengaluru's urban villages 75 per cent of the poor live in rented accommodation. This pattern however cannot be generalized as Mysore provides the opposite picture.

The fact that slums are recognized by the government does seem to offer these areas some marginal benefits when compared to the condition of the poor in, say, villages of Bengaluru. As Table 3.4 tells us, 72 per cent of the poor living in slums have access to sewage lines, while this number is only 61 per cent for the poor living in urban villages. Nearly 40 per cent

**Table 3.3: Distribution of poor households by ownership status of house**

In per cent

| | Bengaluru | | | Mysore | | |
|---|---|---|---|---|---|---|
| | Owned | Rented | Leased | Owned | Rented | Leased |
| Other areas | 18.4 | 80.6 | 0.9 | 62.2 | 36.5 | 1.4 |
| Slums | 57.3 | 42.7 | 0.0 | 33.3 | 66.7 | 0.0 |
| Urban villages | 21.4 | 75.0 | 3.6 | 0.0 | 0.0 | 0.0 |

Source: NIAS Survey, 2013

**Table 3.4: Distribution of poor households by access to sanitation**

In per cent

| | Bengaluru | | | | Mysore | | | |
|---|---|---|---|---|---|---|---|---|
| | Sewage line | Septic tank | Pit latrine | Others | Sewage line | Septic tank | Pit latrine | Others |
| Other areas | 76.6 | 0.3 | 22.8 | 0.3 | 95.9 | 0.0 | 1.4 | 2.7 |
| Slums | 72.0 | 1.3 | 10.7 | 16.0 | 83.3 | 0.0 | 0.0 | 16.7 |
| Urban Villages | 60.7 | 0.0 | 39.3 | 0.0 | — | — | — | — |

Source: NIAS Survey, 2013

of those living in Bengaluru's urban villages have to make use of pit latrines. This is not to suggest that all the poor households in slums are better off with 16 per cent of these households having to use 'other' means for sanitation, something that those living in urban villages do not have to do.

Slums also have greater access to public taps. As Table 3.5 tells us, close to 90 per cent of the poor living in urban villages and other areas of Bengaluru use public taps or shared taps for water. This number is higher for slums at nearly 99 per cent. But 95 per cent of the poor living in slums in Bengaluru have access to public taps compared to just around 61 per cent for the poor households in other areas and urban villages in the city.

The different places where the poor live provide very different living environments. And each environment has different levels of access to even something as basic as cooking fuels. A significant proportion of the non-slum poor in Bengaluru have access to LPG – 75 per cent in urban villages and 66 per cent in other areas – whereas in slums in Bengaluru this access is less than 15 per cent. The same difference is noticeable in Mysore as well. Table 3.6 tells us that all the poor households in slums use kerosene as their primary fuel for cooking while 73 per cent of the poor in other areas use LPG as their primary source of energy for cooking.

The identification of the poor with those residing in slums is thus quite misleading. Only a fraction of the poor live in them,

**Table 3.5: Distribution of poor households by use of public taps**

In per cent

| | Bengaluru | | | Mysore | | |
|---|---|---|---|---|---|---|
| | Public taps | Shared taps | Only private taps | Public taps | Shared taps | Only private taps |
| Other areas | 60.9 | 27.5 | 11.6 | 28.4 | 17.6 | 54.1 |
| Slums | 94.7 | 4.0 | 1.3 | 83.3 | 16.7 | 0.0 |
| Urban Villages | 60.7 | 28.6 | 10.7 | — | — | — |

Source: NIAS Survey, 2013

**Table 3.6: Distribution of poor households by main source of energy for cooking**

In per cent

| | Bengaluru | | | | Mysore | | | |
|---|---|---|---|---|---|---|---|---|
| | LPG | Electricity | Kerosene | Firewood | LPG | Electricity | Kerosene | Firewood |
| Other areas | 66.3 | 1.3 | 28.4 | 4.1 | 73.0 | 0.0 | 17.6 | 9.5 |
| Slums | 14.7 | 1.3 | 45.3 | 38.7 | 0.0 | 0.0 | 100.0 | 0.0 |
| Urban Villages | 75.0 | 0.0 | 17.9 | 7.1 | — | — | — | — |

Source: NIAS Survey, 2013

and only a fraction of the slums are occupied by the poor. And urban strategy that ignores this element will, at best, be ineffective and partial.

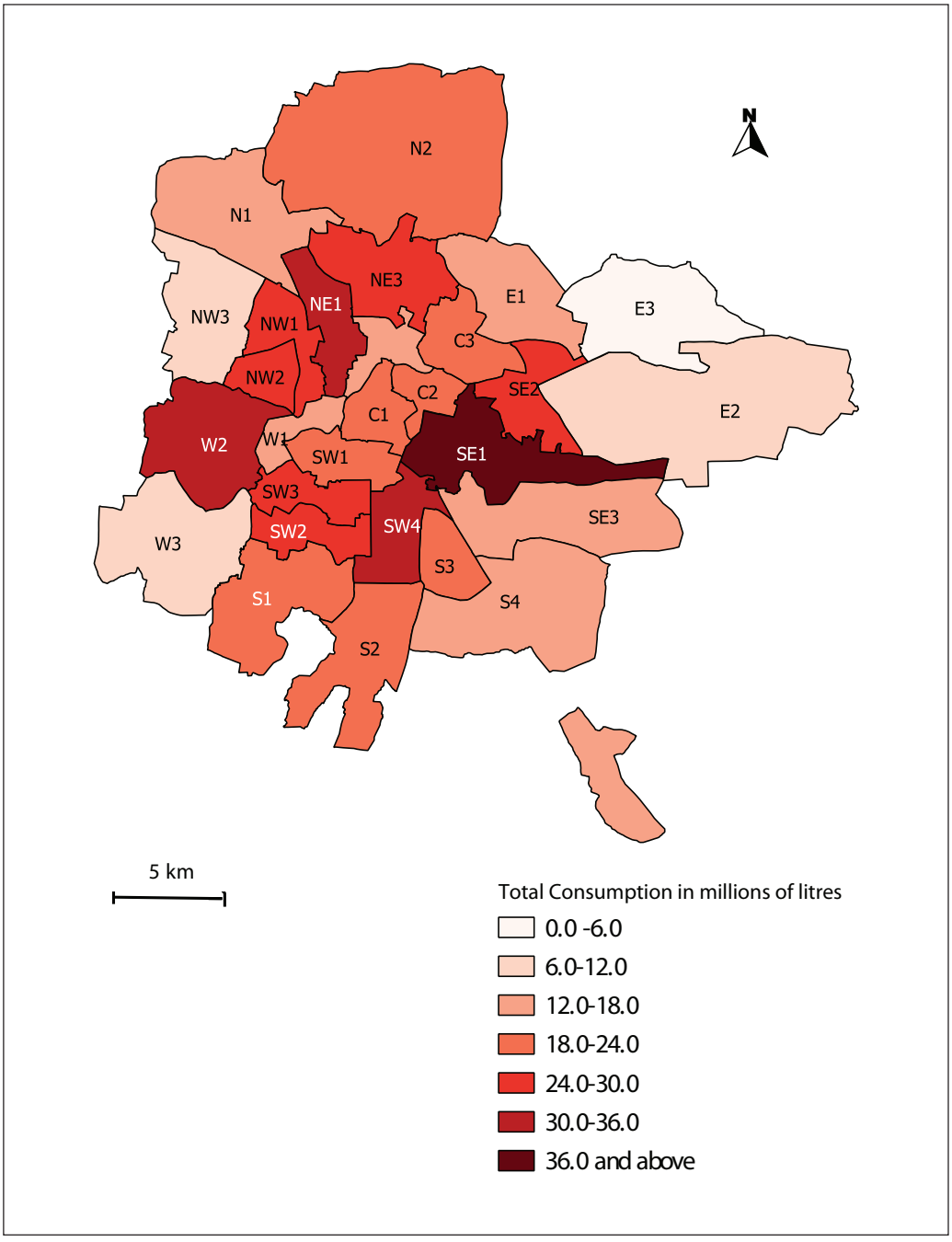
### How do we generate and manage the resources that are needed?

One of the difficulties with planning for the city in isolation is that it ignores the pressures that the city places on its surrounding areas. This problem reached crisis proportions when villages near the city strongly opposed the location in their vicinity of landfills for Bengaluru's garbage. The CDP for Bengaluru shows a similar lack of sensitivity to the possibility of a conflict of interests between the city and the rural areas. In its SWOT analysis the CDP for Bengaluru lists water availability in the Cauvery basin as one of the strengths of the city. But the availability of this water is subject to an inter-state dispute. It is also not clear that farmers within Karnataka will be willing to allow Bengaluru as much water as the city demands from the Cauvery. The city is already beginning to feel these pressures in poor-monsoon years. Indeed, there may even be a case to shift the availability of water in the Cauvery basin from the Strengths box of the SWOT analysis to the Weaknesses box.

The problems of sharing resources are not only between the city and the countryside but within the city as well. This can be seen in the case of water supply. Bengaluru has become increasingly dependent on Cauvery water that enters the city through the Tathaguni pumping station. This entry point is to the south-west of the city. But as Map 3.4 tells us, the consumption points are predictably spread across the city, with some of the relatively larger points of billed consumption being to the north. As the terrain from the southwest of Bengaluru to the northern parts of the city is not smoothly downward sloping, supplying water to the north of the city necessarily involves the higher energy cost of pumping water to these areas. Is there a case then for encouraging the main water consumers to locate towards the south of the city? While there may be no easy answers to such questions the CDP does not even explicitly recognize such issues in the distribution of resources across the city.

### The present in the future

One of the major shifts JnNURM seeks to make is from a largely spatial Master Plan to a strategic plan for the city. It seeks to look not only at the use of space but also at the other elements of the quality of life as the city develops as an engine of growth. To this end there is considerable attention paid in the CDP to the availability of facilities for the citizens including, and especially, the poor. What is not adequately recognized however is that the citizens of a city are not just users of various facilities, but also a part of the resources that determine the course a city takes. The role of education and culture does not find much place in the CDP for




Map 3.4: Total Per-day Billed Water Consumption in Bengaluru city, 2012

Bengaluru. Culture does find greater mention in the CDP for Mysore, with heritage being a significant component of that plan. But in both CDPs there is very little recognition of the relationship between the growth of a city and the development of its human capital. The development of the education system in the two cities does not merit a separate sectoral analysis in either of the CDPs.[11]

There is also very little attention paid to the way the next generation uses the spaces available in the city in their less formal actions. It can be argued that children learn as much in play as in formal education. And the spaces that are available to them to play influence their attitudes to the city. Children who have grown up playing on the streets will find it that much more difficult to treat these spaces as necessarily being dominated by traffic and its rules. They can then tend to treat the roads in much more informal ways even when they drive vehicles. This problem is particularly acute in Bengaluru where, as can be seen in Table 3.7, the proportion of children between the ages of five and fifteen whose main places of play are roads is not negligible, at 8.4 per cent. It is also worth noting that this proportion does not show a significant decline in the higher asset classes of our sample. The proportion of children in Mysore whose main place of play is the road is significantly lower, but here again there is no decline in the higher asset classes. It must be remembered that our highest asset class would correspond to the middle and upper middle classes and

**Table 3.7: Distribution of children between the ages of 5 and 15 by the main places where they play**

In per cent

| Asset class | School | | Home | | Park/playgrounds/ open areas | | Road | |
|---|---|---|---|---|---|---|---|---|
| | Bengaluru | Mysore | Bengaluru | Mysore | Bengaluru | Mysore | Bengaluru | Mysore |
| 1 | 37.3 | 42.0 | 36.1 | 34.0 | 20.2 | 20.0 | 6.0 | 4.0 |
| 2 | 26.9 | 65.2 | 42.0 | 28.8 | 21.6 | 4.5 | 8.6 | 1.5 |
| 3 | 17.9 | 30.6 | 55.6 | 65.9 | 20.5 | 3.6 | 6.1 | 0.0 |
| 4 | 19.7 | 30.0 | 37.2 | 50.0 | 30.1 | 15.7 | 12.6 | 4.3 |
| 5 | 20.6 | 31.3 | 41.3 | 59.7 | 30.1 | 6.0 | 7.9 | 3.0 |
| 6 | 30.0 | 28.9 | 26.9 | 52.6 | 36.9 | 5.2 | 6.2 | 13.2 |
| Total | 25.5 | 38.0 | 40.2 | 49.7 | 25.6 | 8.8 | 8.4 | 3.5 |

Source: NIAS survey 2013

Note: Rows for individual cities need not add up to 100 as there are other areas where children can play such as sports complexes.

[11] The Mysore CDP does list the major educational institutions when providing a background of the city, but there is little attention to the issues in this sector.

not the rich. Nevertheless the idea of the road being a legitimate place of play appears to be a norm that has some acceptance, and must therefore be factored in when planning for a city. If it is believed that this is not conducive to the growth of a modern city with its high-speed traffic, adequate attention must be paid in the CDPs to providing safe and adequate spaces for play in our cities.

The CDPs of Bengaluru and Mysore thus fall some distance short of being convincing and comprehensive strategic documents that can determine the course the two cities must take. In the absence of such a convincing strategy the CDPs can do little more than identify the points of pressure in different elements of the city. The CDPs focus on specific detailed plans for individual sectors including water supply and sewerage, management of solid waste, urban drainage systems, roads and transportation, heritage, urban renewal, civic amenities and urban governance. But without a convincing overall strategy, the CDPs are not in a position to provide a strict set of priorities for the numerous projects that the two cities need.

4

# Choice of Infrastructure Projects

In the absence of a clear and overwhelming set of priorities from the CDPs the choice of projects has been influenced by the agencies and the processes through which they have been chosen. At the core of these processes are the state level nodal agencies. A nodal agency generally looks after the process of inviting projects from urban local bodies or parastatal agencies, managing funds received from central and state governments, and distribution of the funds as per the financial pattern given in the JnNURM guidelines. The nodal agency is expected to appraise the submitted detailed project reports; this can be done either in-house or through external agencies or state level technical agencies. There are three state level nodal agencies in Karnataka. The Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) is the agency for the UIG and BSUP components of JnNURM in Karnataka. The Department of Municipal Administration (DMA) is the nodal agency for the UDISSMT component, while the Karnataka Slum Development Board (KSDB) is the nodal agency for the IHSDP component.

The responsibility for implementing projects lies with the urban local bodies and the various parastatal agencies. There are a number of implementing agencies for Bengaluru and Mysore, including the Bruhat Bengaluru Mahanagara Palike (BBMP), the Bengaluru Water Supply and Sewerage Board (BWSSB), the Bengaluru Development Authority (BDA), the Bengaluru Metropolitan Transport Corporation (BMTC), the Karnataka State Road Transport Corporation (KSRTC), the Karnataka Slum Development Board(KSDB), the Mysore City Corporation (MCC), the Mysore Urban Development Authority (MUDA), and the Karnataka Urban Water Supply and Drainage Board (KUWSDB)etc.

In theory, these implementing agencies are expected to develop a shelf of projects based on the CDPs and the JnNURM guidelines. But with the CDPs being less than overwhelming, these agencies have gained a greater freedom in their choice of projects. Indeed, it is not entirely unknown for the implementing agencies to already have a shelf of projects which they try to carry out either through their own funds or through funds from various lending agencies like World Bank, Asian Development Bank etc. Some projects of the implementing agencies were also funded by the Government of Karnataka. The implementing agencies have tried to use JnNURM funding to reduce the loan component from these lending agencies. Before adding a project to the shelf of projects, an implementing agency generally conducts a feasibility analysis, which is typically done internally.

The first step that the implementing agency takes after deciding to apply for funding for a project under JnNURM is to appoint a consultant to prepare the detailed project report. Consultants play an important role both in the formulation of the detailed project report and the management of the implementation of projects. Each component under JnNURM has its own panel of consultants and it is rare to see a consultant working on a range of projects under different components. As mentioned above, the consultants work on the detailed project report only after some sort of pre-feasibility analysis has been conducted by the implementing agency. Some consultants felt that the pre-feasibility analysis carried out by the implementing agencies underestimate the work both in terms of the manpower as well as the time required for completion.

The implementing agency also interacts with the state level nodal agency for applying for funding under JnNURM. Once the project is approved the implementing agency appoints a project management consultant who looks into the quality and timeline issues with respect to the project after it has been awarded to contractors.

Given the prominent role played by the implementation agencies in the choice of projects the overall direction of JnNURM in Karnataka has to be traced from the patterns that emerge on the ground. The choice between the different components of the Mission, as well as that between the different sectors that the Mission could have supported has to be derived from the investment patterns that have emerged during the course of the Mission. And the pattern that emerges in both sets of choices is quite clear.

As can be seen in Table 4.1, JnNURM is predominantly an urban infrastructure programme. The Urban Infrastructure and Governance (UIG) component accounts for around two-thirds of the approved costs of JnNURM projects. Together with the costs of projects under the Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), infrastructure accounts for nearly four-fifths of the approved costs of JnNURM. The relative importance given

**Table 4.1: Distribution of approved costs of JnNURM projects**

| JnNURM Component | Bengaluru (₹ Cr) | Mysore (₹ Cr) | Total (₹ Cr) | Share of total JnNURM cost in per cent |
|---|---|---|---|---|
| UIG | 2887.19 | 894.01 | 3781.20 | 66.52 |
| BSUP | 584.83 | 258.84 | 843.67 | 14.84 |
| UIDSSMT | NA | NA | 682.49 | 12.01 |
| IHSDP | NA | NA | 376.66 | 6.63 |
| Total | 3472.02 | 1152.85 | 5684.02 | |

Source: KUIDFC status report December 2012, Department of Municipal Administration status presentation as on December 31, 2012; Karnataka Slum Development Board IHSDP status as on 31st March 2013. The IHSDP figures are estimated costs. NA = Not applicable.

to infrastructure when compared to anti-poverty components is particularly sharp in the Mission cities. The gap is large enough in the small and medium towns with the approved costs in infrastructure accounting for twice the approved costs in schemes for the poor. Bengaluru and Mysore reveal an even sharper difference as in the two cities taken together infrastructure accounts for well above four times the costs of the Basic Services to the Urban Poor component.

A second, somewhat predictable, pattern that emerges from the distribution of approved costs is the primacy of Bengaluru in JnNURM in Karnataka. Projects in Bengaluru account for 61 per cent of the total approved costs of projects under JnNURM in the state. This dominance occurs within a larger preference for the chosen JnNURM cities over other small and medium towns. Bengaluru and Mysore, taken together, account for over four-fifths of the approved costs of JnNURM projects in Karnataka. This pattern is consistent with the focus of JnNURM on major cities. If we take the process of urbanization as a whole, where cities and towns play different roles in the entire process, and require state support to play these roles efficiently, the overemphasis on Bengaluru and Mysore can be a serious limitation.

The pattern that emerges from the approved costs is broadly reflected in the number of projects as well. Bengaluru with 53 projects has the maximum number of JnNURM projects in Karnataka. Of these projects, 39 projects come under the UIG component, with the remaining 14 projects being a part of the BSUP component. Mysore has 14 projects under JnNURM, with 10 UIG projects and 4 BSUP projects. The size of the projects is understandably smaller in the small and medium towns. The relatively lower share of JnNURM funds that have been provided to UIDSSMT has been spread over various projects in 30 towns. With respect to IHSDP, KSDB received 48 proposals of which 34 proposals were approved by the SLEC and the CSMC. 25 projects were approved in the first phase while nine were approved in the second phase.

## Urban Infrastructure and Governance

Within the dominance of Bengaluru and Mysore there is a further concentration in specific sectors of Urban Infrastructure and Governance. In both Bengaluru and Mysore mobility has an important place in terms of approved costs under the UIG component of JnNURM. Table 4.2 tells us transport accounts for as much as 44 per cent of the approved costs of UIG projects in Mysore. The number seems somewhat lower for Bengaluru at 22 per cent. But once we add other mobility related projects like underpasses, grade separators, sidewalks and flyovers to the list, the share goes up to a third of the approved costs of UIG projects. In Bengaluru drainage projects as well as storm water drains account for close to another third each of the approved costs. As a result the three sectors – mobility, storm water drains and other drainage – account for 99 per cent of the approved costs. This focus on just three sectors leaves out several critical areas from benefiting significantly from JnNURM funds, including water, solid waste management and the preservation of Bengaluru's heritage.

**Table 4.2: UIG projects in Bengaluru**

| Sector | No. of Projects | | Total approved cost of projects in ₹ crore | | % Share | |
|---|---|---|---|---|---|---|
| | Bengaluru | Mysore | Bengaluru | Mysore | Bengaluru | Mysore |
| Transport | 11 | 4 | 636.08 | 393.05 | 22 | 44 |
| *Development of TTMC* | 10 | 0 | 333.01 | 0 | 11.5 | 0 |
| *Funding of buses* | 1 | 1 | 303.07 | 45.58 | 10.5 | 5.1 |
| *Transport infrastructure/ Intelligent systems* | 0 | 2 | 0 | 107.96 | 0 | 12.1 |
| *Outer ring road* | 0 | 1 | 0 | 239.51 | 0 | 26.8 |
| Underpass/Grade Separator/ Sidewalks/Flyover | 13 | 0 | 356.15 | 0 | 12.3 | 0 |
| Water | 2 | 2 | 25.96 | 303.36 | 0.9 | 33.9 |
| Drainage/Sewerage/ Underground Drainage | 9 | 0 | 943.62 | 0 | 32.8 | 0 |
| Storm water drains | 4 | 1 | 925.38 | 125 | 32 | 14 |
| Heritage core and urban renewal | 0 | 1 | 0 | 39.45 | 0 | 4.4 |
| Zoo infrastructure | 0 | 1 | 0 | 3.3 | 0 | 0.4 |
| Solid Waste Management | 0 | 1 | 0 | 29.85 | 0 | 3.3 |
| Total UIG projects | 39 | 10 | 2887.19 | 894.01 | 100 | 100 |

Source: KUIDFC status report December 2012

Note: TTMC stands for Traffic and Transit Management Centre.

In Mysore the degree of concentration of approved costs of projects under JnNURM across different sectors is less, even if only in comparison to Bengaluru. The non-transport related projects under the UIG component do have one major alternative focus in water projects. The water sector accounts for 33.9 per cent of the approved costs for UIG projects so that water and transport together account for nearly 78 per cent of the total UIG costs. But the remaining 22.1 per cent is distributed across several sectors: storm water drains, heritage, zoo infrastructure and solid waste management.

The difference between Bengaluru and Mysore in their emphasis on individual sectors is not just in the degree of concentration. The choice of specific sectors too does tend to vary quite significantly. The share of funding of buses at 5.1 per cent in Mysore is half of that in Bengaluru, while share of the Outer Ring Road project in Mysore is at 26.8 per cent more than double the share of road projects in Bengaluru. It must also be noted that under JnNURM Bengaluru does not have any solid waste management project, while Mysore has utilized the JnNURM opportunity to prepare a plan. Water projects in Mysore both in share as well as absolute number have an important presence compared to Bengaluru, which ironically, is a more parched city. Approved cost of storm water drain projects in Bengaluru in absolute terms is more than seven times that in Mysore.

The prominent role of the implementing agencies in the choice of projects could be seen as a sign of effective decentralization. These agencies are closer to the reality on the ground and are hence in a better position to determine what a city needs. But to evaluate the extent of effective decentralization we need to also take on board the difference between decision making by parastatals and that by elected local bodies. Since parastatals are in effect controlled by the state government, the extent of decentralization is better captured by the share of elected urban local bodies in the projects funded through JnNURM. And the picture here is less than ideal. As

**Table 4.3: Share of implementing agencies in UIG projects**

| Bengaluru | | | | Mysore | | | |
|---|---|---|---|---|---|---|---|
| Implementing agency | No. of projects | Total approved cost ₹ crore | Share in per cent | Implementing agency | No. of projects | Total approved cost ₹ crore | Share in per cent |
| BBMP | 14 | 1196.87 | 41.45 | KUWSDB | 2 | 303.36 | 33.93 |
| BWSSB | 11 | 969.58 | 33.58 | MCC | 3 | 194.30 | 21.73 |
| BMTC | 11 | 636.08 | 22.03 | KSRTC | 3 | 153.54 | 17.17 |
| BDA | 3 | 84.66 | 2.93 | MUDA | 1 | 239.51 | 26.79 |
| | | | | Zoo Authority of Karnataka | 1 | 3.30 | 0.37 |

Source: KUIDFC status report December 2012

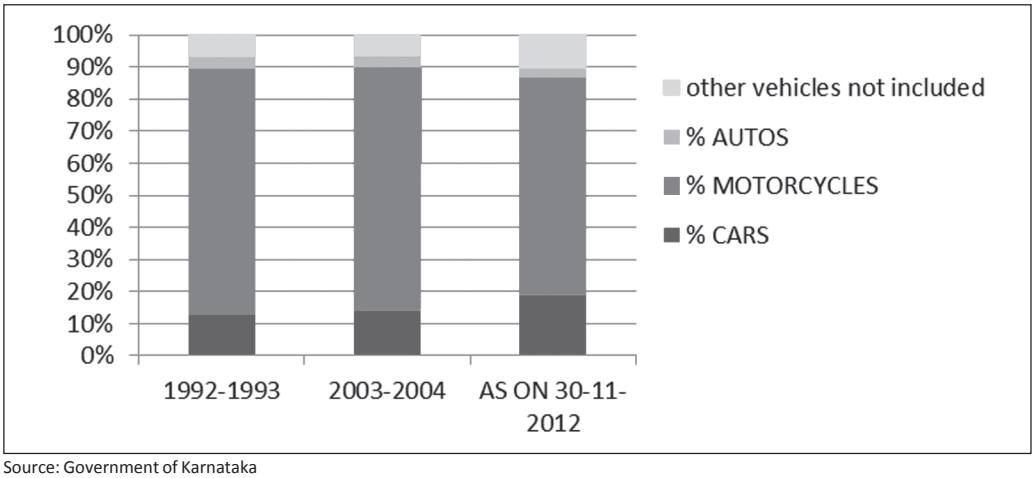
Table 4.3 tells us the elected urban local bodies are not the main implementing agencies in either Bengaluru or Mysore. The Bruhat Bengaluru Mahanagara Palike (BBMP) accounts for only 41.45 per cent of the total approved costs of UIG projects. The picture in Mysore is very much worse with the Mysore City Corporation accounting for just a little over a fifth of the approved costs. The JnNURM process is thus predominantly parastatal led, especially in Mysore.

The implications of this parastatal-led choice of projects have to be understood in terms of the requirements of each city. As we have already argued, the City Development Plans fall short of identifying the overall strategic priorities of Bengaluru and Mysore. The plans do however list out the challenges in individual sectors. We can then use the CDP's assessment of the problems in each sector as the starting point of our comparison between the city's requirements and the choice of projects. Additional information has been used, wherever possible, to strengthen the picture of the city's requirements in specific sectors.

## Transport

The CDP of Bengaluru provides a central role to transport in its belief that 'When citizens and visitors refer to the infrastructure in Bengaluru being "under stress," a large part of such reference is to the transportation infrastructure and congestion in the road and transport system.'[1] The growth of the city, as is only to be expected, has been marked by a growth in the number of vehicles. What is interesting

**Chart 4.1: Percentage of vehicles registered in Bengaluru**




Source: Government of Karnataka

[1] Revised City Development Plan, Bengaluru, 2009, Vol I, p 102

about the growth since the information technology revolution in the city is the growing share of cars in the total vehicles registered. As is reflected in Chart 4.1 the share of cars in vehicles registered increased from 13 per cent in 1992-93 to 19 per cent in the first eight months of 2012-13. The growth was sharper in the later years, with the share of cars being just 14.4 per cent in 2003-04.

The effects of the increase in the share of cars in Bengaluru's transport system must be seen in the context of car owners laying claim to road space, even when the car is not being used. This is best seen in their inability or unwillingness to make space for their cars inside their compounds. As Table 4.4 tells us 30 per cent of car-owning households in Bengaluru park their cars on roads at night, with some of them parking more than one car on the road. What is more striking is that this is not a problem of old city areas alone. Indeed, it is more serious in the newer areas of Bengaluru, particularly those in the south and east that have grown with the information technology industry. In Bommanahalli zone in the southern periphery of Bengaluru nearly 54 per cent of car-owning households park their cars on the road at night, with 7.7 per cent of these households parking two cars on the road at night. In Mahadevapura zone on the eastern periphery of Bengaluru 37.5 per cent of the car-owning households park their cars on the road at night, with 4.2 per cent parking two cars on the road. In Byatrayanpura in the northern periphery of Bengaluru, an area less associated with the information technology spurred growth of the city, too the number of car-owning households using the road as parking space in the night is not low at 39.1 per cent, though there is no evidence of households parking more than one car on the road at night.

In responding to the challenge of rapidly growing vehicular traffic, the overall strategy the revised CDP offers is to make the Bengaluru transport system compliant

**Table 4.4: Distribution of car-owning households by number of cars they park on roads**

| Zone | 0 Cars | 1 Car | 2 Cars |
|---|---|---|---|
| Bommanahalli | 46.2 | 46.2 | 7.7 |
| Byatarayanapura | 60.9 | 39.1 | 0.0 |
| Dasarahalli | 68.2 | 31.8 | 0.0 |
| East | 79.7 | 20.3 | 0.0 |
| Mahadevapura | 62.5 | 33.3 | 4.2 |
| Rajarajeshwarinagar | 87.5 | 12.5 | 0.0 |
| South | 68.6 | 31.4 | 0.0 |
| West | 68.9 | 31.1 | 0.0 |
| Total | 69.5 | 29.7 | 0.8 |

Source: NIAS Survey 2013

with the National Urban Transport Policy. It proposes a public transport system that allows seamless travel between one mode and another and between systems managed by different operators. This requires substantial investments in the construction of ring roads, bus-based mass transport, rail-based systems, elevated corridors, inter-modal interchanges, creation of parking facilities, and amenities for freight traffic. For this to be done in an environmentally friendly manner there is a need to shift to CNG based vehicular systems, reduction of emissions and the introduction of eco-audits. The problems of the environment as well as congestion could also be eased by providing a priority to public transport by increasing public transport modes and discouraging private modes. A critical part of this proposal is to reduce the growth in the number of two-wheelers and cars by 50 per cent. The CDP also makes a case for non-motorized modes as they are environmentally friendly. This in turn would require addressing the safety concerns of cyclists and pedestrians by encouraging the construction of segregated rights of way for them, including pedestrian walkways/skywalks, cycle paths and cycle facilities. This reduction in the growth of private vehicles would have to be compensated by increasing the modal share of BMTC from 56 per cent, or 35 lakh passengers carried per day, to 50 lakhs passengers per day and enhancing the average speed of buses from 17.5 km per hour to 22.5 km/hour. This would require technology up-gradation in public transport systems to increase load factors and speeds. The CDP proposes bringing about these changes while reducing accidents by 50 per cent.

Given the magnitude of this strategy it was only to be expected that JnNURM would play only a partial role. The specific projects chosen under JnNURM do however reflect a prioritization within this strategy. The emphasis of JnNURM was on three broad sets of activities. There was a significant emphasis on the construction of underpasses, grade separators, and flyovers. Projects to construct underpasses were taken up at Malleshwaram Circle, C.N.R Rao Circle, Tagore Circle, Magadi Road and Chord Road Junction, and on the Ring Road at the Hennur Banaswadi, Kadirenahalli Road and Puttenhalli Junctions. There are two projects for grade separators at Gali Anjaneya Temple and Yeshawathpur Junctions. Two more projects involved constructing flyovers on the Outer Ring Road at Agara and Iblur Junctions. There were also projects that had the potential to be economically self-sustaining. Ten Traffic and Transit Management Centres (TTMCs) were proposed at Jayanagar, Shantinagar, ITPL (Whitefield), Vijayanagar, Koramangala, Banashankari, Bannerghatta, Kengeri, Domlur, and Yeshwanthpur. As the TTMCs typically had office space as well as parking space they also had a fund generating component. The investment in 1000 buses similarly had a revenue generating component. The revenue generating component was enhanced with a significant

proportion of these buses being Volvo or Marco Polo buses which charged higher fares.

The picture that emerges from the mobility related projects under JnNURM in Bengaluru is one that is focused primarily on improving the conditions for vehicular traffic. Underpasses, grade separators and flyovers are meant to increase the speed of the traffic, the TTMCs help organize the bus system as well as provide parking, and the Volvo and Marco Polo buses are expected to tempt car and other private vehicle users to switch to public transport. Some of the other projects mentioned in the CDP, particularly those relating to pedestrians and cyclists do not find a place in the projects that were chosen.

In the case of Mysore, the CDP outlines a plan to decongest the city with a network of ring roads – an Outer Ring Road (with a proposed width of 45m), an Intermediate Ring Road (with a proposed width of 30m) along the existing roads, and an Inner Ring Road, also along existing roads. Some of the key issues in road maintenance are the presence of potholes on important roads, lack of adequate tourism-friendly signages, upgradation of roads connecting ring roads with the CBD, the need for a bus rapid transport system, the absence of a bypass for diverting through traffic, traffic congestion arising from lack of parking places in commercial areas, and the lack of an organized bus stand for private buses.

The CDP proposes the development of the local commercial areas in Mysore, which are expected to serve as countermagnets in reducing congestion in the city centre. The activities proposed for developing the system of roads and transportation for this purpose are the completion, expansion, and maintenance of ring roads and radial roads, construction and maintenance of road bridges and culverts, footpaths, storm water drains and street lights. Other proposed activities include junction improvements, provision of parking facilities at bus stands and railway stations, and introduction of hop in-hop off tourist shuttles. The CDP also points to the need for a greater emphasis on safety-related maintenance and upgrades on congested roads. The CDP says the city at some point would need to examine the feasibility of mass transport systems such as Bus Rapid Transit, electric trolley buses, or light rail systems.

In Mysore too the JnNURM projects that gained approval were designed to help vehicle users. The two-lane Bengaluru to Mysore-Nanjangud segment of the Outer Ring Road was to be upgraded to six lanes. The transport infrastructure facilities were to be developed including the building of an Intelligent Transport System and an Innovative Environment Project for Mysore city. JnNURM also funded the acquisition of 150 buses.

### Storm water drains

The undulating terrain of Bengaluru once provided for a natural drainage system

with around 400 lakes. The topography of Bengaluru consists of well-defined valleys radiating from the High Grounds ridge in the north. Much of the city lies to the south of the ridge and can be divided into distinct drainage zones as the area is characterized by distinct valleys: Vrishabhavathi, Koramangala and Challaghatta Valleys which run in the north and south. There is a fourth valley system, the Hebbal series, which addresses drainage in the north of the city and runs from north to east.

This system has come under severe strain due to the inadequately planned growth of Bengaluru. The CDP notes that the number of lakes has been reduced to 64. BWSSB notes that the cleaning of natural drains is becoming a challenge for most municipal authorities owing to factors such as the discharge of untreated wastewater, encroachment, and illegal buildings. This has led to the overflow of storm water or the flooding of rainwater. This is most visible as the roads turn into drains. There have also been deaths in storm water drains and the flooding of houses. The NIAS survey points out, in Table 4.5, that this challenge is particularly serious in some of the older areas of the city, with the West Zone being the most seriously affected.

In the light of this situation the CDP has suggested the construction, remodelling and rehabilitation of storm water drains and road side drains, removing silting, construction of retaining walls, laying of beds, providing enabling and awareness information architecture, and Green Area development. JnNURM has targeted the most urgent task of remodelling primary and secondary storm water drains in the four major valleys, namely the Hebbal valley, Vrushabhavathi valley, Koramanagala valley, and the Challaghatta valley.

In Mysore the topography is such that the waste water drains into three valleys: the Kesare Valley in the north, Dalvai tank feeder valley in the south, and to the Malalavadi tank valley. The CDP for Mysore notes that silting of the existing storm water drains leads to flooding in Devraj Urs Road, Agrahara, and the Chamundi hills area. The problem is accentuated by the fact that the sewerage from several areas is let into the storm water

**Table 4.5: Proportion of total houses that were flooded in the last five years**

In per cent

| Zone | Proportion of houses flooded houses |
|---|---|
| East | 2.7 |
| Mahadevapura | 3.9 |
| South | 3.3 |
| West | 5.4 |
| Other zones | 0.7 |
| All Bengaluru | 2.8 |

Source: NIAS Survey 2013

drains and the natural valleys. The CDP suggests several projects including remodelling of storm water drains, increasing the coverage of the storm water drainage network, delinking the sewerage system from the storm water drainage system by completing missing sewer links, and desilting to clean up the storm water drains.

The JnNURM projects in Mysore are designed to remodel the storm water drains.

## Urban Renewal

As a city that is more than four and a half centuries old Bengaluru has its core areas that require special attention. The CDP identifies Chickpet, Cubbonpet, Cottonpet, Majestic,Gandhi Nagar, Vasanth Nagar, Shivaji Nagar, Richmond Town, and Chamarajpet as the core areas requiring urban renewal. The CDP points out that the population in these areas has a density that is three to four times higher than the average for the entire BBMP area. Its land use is highly mixed though its economy is predominantly dependent on trading activities. Dotted with historic properties the area is slow to accommodate new developments. And its narrow roads constrain the provision of services such as water supply, drainage, and solid waste management.

The CDP proposes a package of measures to address the challenge of urban renewal in Bengaluru, including the diversion of traffic in these areas by the introduction of "one-ways", enforcement of new parking regulations, ban on entry of heavy goods vehicles in such areas, removal of encroachments, providing appropriate transport system for the commuters to reduce the use of vehicles in these areas, development of pedestrian walkways, construction of cycling zones, demarcation of transport and utility zones, maintenance of open spaces, and improvement of civic services.

The list of approved projects under JnNURM does not suggest a high priority to this area. There are projects to upgrade sidewalks and asphalt roads, but these projects are in areas surrounding MG Road and Koramangala and not in the areas identified as requiring urban renewal.

## Solid Waste Management

Solid waste management is an issue that has reached crisis proportions in Bengaluru. The challenge of managing solid waste has predictably grown with urbanization, both because of the magnitude of the waste generated as well as the resistance to urban friendly solutions such as dumping the waste in rural areas. This problem may have been accentuated in Bengaluru by the city's decision to rely almost entirely on door-to-door collection of household garbage. As can be seen in Table 4.6 as many of 20.5 per cent of the households in Bengaluru admit to disposing their garbage at the street corner. This problem is particularly acute in the slums as well as the outlying zones of

Byatrayanapura and Rajarajeshwarinagar. Indeed, in Byatrayanapura over 70 per cent of the households admit to leaving their garbage at street corners. And since street corner garbage bins have been removed in most parts of the city, a significant portion of the city's garbage is left directly on the side of the streets. In contrast Mysore's performance in garbage collection is very much better with as high as 97.2 per cent of the households saying they use the corporation's collection system.

Bengaluru and Mysore assign multiple authorities to manage solid waste generated in the city. The Urban Local Bodies are designated to be responsible for municipal solid waste management (MSWM). The CDP for Bengaluru speaks of the accepted "waste hierarchy principles of reduction, reuse, recovery, and disposal".[2] But the strategy it proposes is concentrated on collection and disposal. This is evident from the contours it identifies for the proposed strategy: door-to-door collection at household level, transportation to treatment and disposal facilities, providing flexibility in MSW management for addressing local issues, leveraging the existing initiatives including Swachha Bengaluru and experimentation on mechanical sweeping, and development of scientific MSW treatment (including waste to energy projects) and disposal facilities. The challenges it identifies too are primarily concentrated on the non-segregated waste at source, logistics issues, the absence of regulatory policy for promotion of waste re-use and recycle and lack of community participation.

**Table 4.6: Distribution of households by the main form of garbage disposal**

In per cent

| City/zones | Corporation collection | Road corner | Others, including compost |
|---|---|---|---|
| Bommanahalli | 76.4 | 22.3 | 1.4 |
| Byatarayanapura | 28.3 | 71.1 | 0.6 |
| Dasarahalli | 95.1 | 2.8 | 2.1 |
| East | 81.7 | 15.6 | 2.7 |
| Mahadevapura | 78.7 | 17.4 | 3.9 |
| Rajarajeshwarinagar | 60.8 | 38.1 | 1.0 |
| South | 82.4 | 16.7 | 0.9 |
| West | 90.4 | 8.0 | 1.6 |
| Slums | 38.7 | 51.3 | 10.0 |
| All Bengaluru | 77.1 | 20.5 | 2.4 |
| **Mysore** | **97.2** | **2.8** | **0.0** |

Source: NIAS Survey 2013

[2] Revised City Development Plan, p 92

This approach does not also take into account the role that the informal sector comprising of rag pickers, illegal or unauthorized recyclers used to play before door to door collection was introduced. They did play a role in partially segregating and recycling the waste. There is no doubt that these operations were unorganized and without the requisite environmental, health and human dignity safeguards. But the potential to integrate this existing resource after introducing all the necessary safeguards and standards was not considered in the CDP. Annexure II explores the way the 3R approch has been used in different parts of the world.

The BBMP has been planning a strategy to deal with the challenge of solid waste. The projects to be undertaken would be based on a master plan prep ared by Infrastructure Development Corporation (Karnataka) Ltd (iDeck) and MACE in 2007 after a study was conducted on Municipal Solid Waste generation and their sources. **BBMP sources** stated that the city had treatment and disposal facilities with a combined capacity of 3600 MT/D and a proposal to develop new facilities for future requirements. Two scientifically engineered landfills at Kannahalli and Mavallipura were under implementation on a build-operate-transfer model and a waste to energy plant was being developed with a private organisation. BBMP intended to develop Public Private Partnerships at different stages of the MSW management cycle through service contracts, management contracts and concession contracts.

Municipal Solid Waste Management in Bengaluru is not funded under the JnNURM initiative.

The CDP for Mysore too does not allow for an effective use of the 3R approach to Municipal Solid Waste Management. This is reflected in the virtual absence of any discussion in the CDP on reuse and recycling. It focuses primarily on collection, secondary storage, transportation, and treatment and disposal. In the process it provides an effective summary of the status of each of these elements in Mysore. The issues the CDP highlights are therefore primarily related to the functioning of these components of the Solid Waste Management system. Thus the CDP argues that the main challenges with regard to solid waste management in Mysore are the lack of manpower and infrastructure, lack of community awareness, staff requires proper training, lack of residents' interest and support, and the lack of planning.

The projects the CDP advocates are also concentrated on collection and disposal. The CDP identifies three main targets for JnNURM projects: achieving 100 per cent efficiency in the collection of municipal waste, implementation of source segregation, and the development of an efficient treatment and disposal system.

The projects that have been chosen under the JnNURM in Mysore show a greater awareness than the CDP of the need for a broader approach to solid waste management. As of March 2013, MCC has approved ₹ 29.85 crores for the development

of integrated municipal solid waste management plan using the PPP model.

## Water

Water supply is potentially Bengaluru's most serious infrastructure concern. The city originally relied on the many lakes within it. But as the lakes dried up and the lake beds were put to other uses, Bengaluru became more dependent on river water and ground water. Till recently the north of the city was supplied largely through water from River Arkhavati. But now that source too has dried up, leaving Bengaluru dependent on only the River Cauvery and the city's groundwater. There are already some signs of an emerging crisis visible in the access to water in Bengaluru.

This situation has thrown up several fundamental issues. The most critical of these issues is the inadequacy of resources for augmenting future growth. The Bengaluru Water Supply and Sewerage Board supplies water to the entire Bengaluru Metropolitan Region but a large part of the old City Municipal Councils on the periphery of Bengaluru still depend quite heavily on ground water. Water supply from River Cauvery has been implemented in four stages of which stage 1, 2, 3 and phase 1 of stage 4 have been completed. There is no other river resource apart from River Cauvery. The supply of Cauvery water is dependent on sharing arrangements not only between Karnataka and other states, but also between rural areas, including agriculture, and the

**Table 4.7: Access to water in Bengaluru and Mysore**

In per cent

| Zone | Households with no functioning tap inside them | Households using a public tap | Households that bought water from tankers during the last year | Households that bought water in pots during the last year | Households that bought drinking water in cans over the last year |
|---|---|---|---|---|---|
| Bommanahalli | 35.8 | 45.9 | 10.8 | 0.7 | 31.1 |
| Byatarayanapura | 71.7 | 72.3 | 8.2 | 1.9 | 3.8 |
| Dasarahalli | 23.8 | 43.4 | 39.2 | 1.4 | 30.1 |
| East | 35.6 | 49.4 | 2.5 | 4.5 | 13.0 |
| Mahadevapura | 40.4 | 41.6 | 39.3 | 6.7 | 43.8 |
| Rajarajeshwarinagar | 50.5 | 46.4 | 3.1 | 8.2 | 16.5 |
| South | 21.2 | 50.9 | 18.5 | 6.1 | 26.1 |
| West | 21.5 | 32.1 | 2.3 | 0.2 | 7.7 |
| Slums | 81.3 | 80.7 | 0.7 | 0.7 | 0.0 |
| **All Bengaluru** | **64.2** | **47.7** | **10.3** | **3.2** | **16.6** |
| **Mysore** | **7.0** | **15.8** | **1.2** | **0.0** | **0.3** |

Source: NIAS Survey 2013

cities that are supplied by the river. The city is already facing a challenge in accessing the water required to meet the national standard of 150 litres per capita per day.

The consequences of not being able to meet the national standard are accentuated by the problems of distribution. Bengaluru faces problems of intermittent supply of water as well as uneven distribution. As Table 4.7 tells us there is differential access to tap water both across different zones of the city as well as across economic classes. In two of the zones in the periphery of the city, Rajarajeswarinagar and Byatarayanapura, more than half the households do not have a functioning tap inside them, with the percentage of such households being over 70 per cent in Byatarayanapura. The economic divide is reflected in the fact that over 80 per cent of the households in the slums of Bengaluru do not have a functioning tap inside them.

The inadequate access to water within households has necessarily led to a dependence on public taps, though some households without a tap inside them have access to shared taps. Consequently the zone with the largest proportion of households without a functioning tap inside them, Byatarayanapura, also has the highest proportion of households that use public taps. Again, the use of public taps in the slums of Bengaluru is at over 80 per cent of the households, similar to the proportion without a functioning tap inside the household. What is equally interesting is that even households that have a functioning tap are sometimes, due to the poor quality of supply of water, forced to use public taps. Thus in all the zones, except Rajarajeshwarinagar, the proportion of households using public taps is greater than the proportion of households without a functioning tap within them.

The widespread use of public taps also has consequences for the management of water. The flow of water from these taps is not adequately metered. It is then often difficult to distinguish between water used from public taps and wastage. The tendency to focus on billed water consumption alone tends to overestimate wastage. And the temptation to reduce this overestimated 'wastage' by removing public taps will only make the access to water more difficult for those who need it most.

The crisis in the supply of piped water has led to a greater dependence on ground water. This in turn has led to indiscriminate withdrawal of groundwater. By drawing more groundwater than can be naturally replenished, the groundwater resources in Bengaluru have been rapidly depleted. This has contributed to the withdrawal of sub-standard groundwater. This danger has been compounded by the pollution of water by chemicals and pesticides leading to the risk of water borne diseases. The threat of disease is not confined to poor quality groundwater, with piped water supply also at risk from the occasional leakage of sewerage pipes contaminating drinking water.

JnNURM's contribution to addressing this emerging water crisis is through two

major projects. The first of these approved projects is the augmentation of drinking water to the seven former municipal councils that form the periphery of Bengaluru. This is to be done by providing an additional 100 million litres per day from Cauvery Water Supply Scheme, Stage IV, Phase 1. The second approved project seeks to develop bulk flow metering and monitoring systems for Bengaluru's water distribution network.

The water crisis in Mysore does not appear to be as severe as that in Bengaluru. As can be seen from Table 4.7 the proportion of households without a functioning tap inside them is only a fraction of the same proportion in Bengaluru. This is also true for all the indicators of water stress that the table lists: using public taps, buying water from tankers or in pots, or buying drinking water in cans. The difference however seems to be primarily one of magnitude. The issues that affect water supply and distribution in Mysore are similar to those in Bengaluru, only they are on a smaller scale.

Water to the city of Mysore is supplied from four sources which draw water from River Cauvery and River Kabini. The four sources are Hongally Water Supply Scheme (Stage I and Stage II), Hongally water supply scheme (Stage III), Belagola Water Supply Scheme and Melapura Water Supply Scheme. All the sources are situated at a distance of around 15 kms from the city. The CDP for Mysore estimates that the supply covers 85 per cent of the households which are also metered. The CDP also estimates the consumption of water to be 135 litres per capita per day.

The major challenge for water supply and distribution in Mysore is that of Unaccounted for Water (UFW) which is estimated at around 50 per cent of the supply. There is also the challenge of unequal distribution of water to different parts of the city. Many of the new residential layouts are not provided with adequate water supply. The CDP attributes this to the 'inappropriate augmentation of source, inadequate storage facility, aged and leaking pipes, illegal tapping of water supply pipes, unauthorised house connections, faulty metering, lack of operation and maintenance of system components and adoption of inappropriate design methodology'.[3]

The main thrust of the JnNURM influence on the water situation in Mysore is on modernization and augmenting water supply. The focus on modernization was also enhanced by the Centre. The only suggestion to change a project in the JnNURM process came in the case of a water supply project in Mysore where the CSMC suggested that the proposed water scheme be converted to a 24/7 supply scheme. Though this suggestion seemed beneficial, a consultant suggested that before a 24/7 supply could be started there was a need to meter all users. Thus the

[3] City Development Plan for Mysore, p 53.

work of metering all users had to be tendered to another contractor as a result of which the project was delayed.

Among the approved projects is the remodelling of the water supply distribution network, automation and an integrated management system for Mysore city. A second project is to generate bulk water supply from River Kabini. A third project on water management through surface and rainwater harvesting at Sri Chamarajendra Zoological Gardens is perhaps better seen as a part of the heritage component of JnNURM.

## SANITATION AND SEWERAGE

The challenge of urban sanitation has not completely disappeared with development. Despite being a globally recognized metropolis Bengaluru is still short of ensuring that every household has a toilet within it. As Table 4.8 tells us three per cent of households in Bengaluru do not have a toilet within them. What makes the problem more serious is that there are some parts of the city where the problem is much more pronounced. In at least one zone in the periphery of Bengaluru, Mahadevapura, the proportion is nearly 12 per cent. And in the slums across the city the proportion of households without a toilet in them is as high as 22 per cent.

The less than perfect situation in terms of ensuring every household has a toilet is made worse by the pressures that have been developing on the underground sewage network. Bengaluru has had an underground sewage network since 1922 but it has been slow to develop. It took more than half a century for the sewage to be treated, with the first treatment taking place in 1974. And the network has been slow to expand with only 40 per cent of the area

**Table 4.8: Distribution of households by number of toilets in them**

In per cent

| City/Zone | Number of toilets inside the household | | | | |
|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 or more |
| Bommanahalli | 1.4 | 87.8 | 10.8 | 0.0 | 0.0 |
| Byatarayanapura | 0.0 | 89.9 | 10.1 | 0.0 | 0.0 |
| Dasarahalli | 0.0 | 84.6 | 15.4 | 0.0 | 0.0 |
| East | 0.5 | 80.5 | 18.1 | 0.8 | 0.2 |
| Mahadevapura | 11.8 | 77.5 | 9.6 | 1.1 | 0.0 |
| Rajarajeshwarinagar | 0.0 | 93.8 | 6.2 | 0.0 | 0.0 |
| South | 2.4 | 82.1 | 15.5 | 0.0 | 0.0 |
| West | 0.9 | 87.4 | 11.5 | 0.2 | 0.0 |
| Slums | 22.0 | 77.3 | 0.7 | 0.0 | 0.0 |
| All Bengaluru | 3.0 | 83.8 | 12.9 | 0.3 | 0.0 |
| **Mysore** | **2.0** | **94.0** | **3.7** | **0.2** | **0.2** |

Source: NIAS survey 2013

now being covered. The capacity of the sewers too, both primary and secondary, is insufficient. With storm water also getting into sewage lines there are increased sewage flows in the rainy season, sometimes even leading to the mix of sewage and rainwater overflowing on to streets. Just as storm water gets into sewage lines, there is also the problem of sewage getting into storm water drains. Sewers from slums and low-lying areas are sometimes directly connected to storm water drains. This also contributes to the pollution of lakes and the resultant growth in the number of mosquitoes.

The inadequacy of the sewage lines is compounded by their ineffectiveness. The age of the old system ensures that some of the sewers are damaged. There is also considerable silting up of sewers. As a result silt, grease and floating debris flow into open drains and into treatment plants. And the citizens have not helped the situation by their encroachments on sewage lines and manholes.

JnNURM addresses the challenge of sanitation and sewage in Bengaluru at multiple levels. It has two approved projects focusing on sanitation in the erstwhile City Municipal Councils of Krishnarajapuram and Mahadevapura. Other projects look at the underground drainage systems in Yelahanka, Kengeri, and the erstwhile City Municipal Councils of Rajarajeshwarinagar, Dasarahalli and Bommanahalli. There are also underground drainage works being carried out in Byatarayanapura. In addition, as a part of the BWSSB's Environment Action Plan (Part B), a project seeks to replace or rehabilitate parts of the existing sewerage system of Bengaluru.

Mysore is one of the oldest cities to have underground drainage network. Most of the old city had underground drainage by 1904. Since the old sewerage lines were not capable of taking the increased load and some parts of the old city were not provided with drainage lines a comprehensive scheme was undertaken in 1955. The topography of the city has three valleys into which the entire city drains. The three valleys are northern Kesare valley, southern Dalvai tank feeder valley and Malalavadi tank valley. At present a major part of the city is provided with underground sewer lines. The area covered is around 100 sq. kms, and this area is divided into five drainage districts. The city has three sewage treatment plants.
JnNURM projects are aimed at remodelling the Under Ground Drainage (UGD) network in the old areas of the city and developing a sewage treatment plant (STP) for the areas that are currently not covered.

### Heritage conservation

The heritage strategy of JnNURM in Karnataka is focused primarily on Mysore. The effort as per the CDP of Mysore is to preserve the city's heritage, provide a platform for the city's craftsmen to exhibit their wares to an international audience and ensure better facilities to tourists visiting the city. This includes renovation of heritage buildings, craft villages (silk, sandalwood and other

handicrafts), convention centres and exhibition zones for exhibiting the city's heritage.

The Mysore CDP characterizes any building depicting characteristics of historic or socio-cultural value, striking architectural or artistic significance in respect of style, design, use of construction material etc. (Grading system, three tier) as a heritage building. It also mentions that a heritage building can be "built or inbuilt, urban or rural, old or recent, exceptional or ordinary, dense or dispersed, homogeneous or heterogeneous." A heritage building "may or may not comprise a historical monument" and an appreciation of the spatial relations between buildings, public space, and private courtyards, gardens, perspectives, views, surrounding landscapes etc., and the study of their inter-relationship is another aspect to be kept in mind while identifying heritage buildings. The Mysore CDP focuses on the six areas which have been highlighted in the JnNURM heritage tool kit. These are mainly defining the importance of heritage, identifying, listing and grading heritage buildings, understanding the legal status as well as the institutional set up, sorting out the financial system and also the infrastructure which is required to promote tourism around heritage buildings.

The Mysore CDP proposes that an inventory of buildings requiring maintenance be carried out, and strengthening and structural work be undertaken. The CDP has mentioned that in 2004 a committee called Mysore Area Heritage Task Force was constituted, having a heritage commissioner as the head. This task force is expected to use the Karnataka Town and Country Planning Act 1961 as a tool towards protecting heritage buildings in Mysore. The various bodies which are envisaged as being involved in this aspect are the Urban Development Authorities (UDA) and the Town Planning Authorities (TPA), MHTF, CMC-Mysore and ASI. UDA and TPA, according to the CDP, have already been involved and given the list of monuments to incorporate in CDP and the master plan. The role of civic society groups, industry and trade in protection, maintenance and development is also highlighted as being important. The CDP proposes to provide incentives like property tax exemptions to the owners of private heritage properties. It also puts forward the idea that providing amenities in public places, markets etc. with the aim of catering to the needs of all stakeholders without losing the heritage characteristics are essential.

The endeavour of the stakeholders in achieving the vision would be to provide and/or improve all amenities required for tourism activities, including public conveniences, transport shuttles, and parking lots. It would also require the development of cultural centres, heritage works and other new attractions. The stakeholders should also enable a conducive environment for participation from all quarters, including the private sector. In addition there is need to build the capacity of implementing agencies

and service providers such as drivers and shopkeepers.

Two main projects have been approved under the heritage component of JnNURM. The first project focuses on the heritage core and urban renewal. And the second is on water management through surface and rainwater harvesting at Sri Chamarajendra Zoological Gardens.

The Bengaluru CDP however is not as comprehensive. To begin with, it outlines the various well known tourist destinations in Bengaluru. It has a list of steps to be taken to promote tourism, which includes creating a day for a *hubba.* It also proposes to renovate 300 heritage buildings, develop cultural centers, budget hotels and convention centers. Like the Mysore CDP it aims to create some public amenities such as public toilets, transport facilities, information kiosks, car parks etc. It also calls for proper signage displayed on the buildings. The Bengaluru CDP also provides some budgetary proposals for all the work it has outlined, and has stated that a heritage committee will be constituted. There has however been no heritage project approved under JnNURM for Bengaluru.

## Urban Infrastructure Development Scheme for Small and Medium Towns

When it became clear that the challenge of urban infrastructure was not confined to the originally chosen Mission cities, it was decided to launch a scheme that would meet this need in small and medium towns. There was however no expectation that the infrastructure needs of these towns as a group would be fundamentally different from that of the original Mission cities taken as a whole. The UIDSSMT was thus launched by simply merging the two then existing schemes the Integrated Development of Small and Medium Towns (IDSMT) and Accelerated Urban Water Supply Programme (AUWSP). Assistance under the UIDSSMT includes all urban infrastructure development projects such as water supply, roads, parking space, drainage, solid waste management, sewerage, urban renewal, preservation of water bodies, and prevention of soil-erosion.

The choice of specific projects is expected to be based on City Level Investment Plans (CLIPs). But the shortfalls in the small and medium towns are so widespread that a large number of projects come into consideration. And the possibilities were further extended by a willingness to go beyond the strict prioritization in individual CLIPs. A look at the CLIPs for 18 of the 30 towns with UIDSSMT projects reveals that in nine of them the projects were among the priorities listed in the plans while in another nine they were not. But the projects were generally among the important infrastructure requirements of the towns. Given the role of the Accelerated Urban Water Supply

**Table 4.9: Sector wise distribution of UIDSSMT projects**

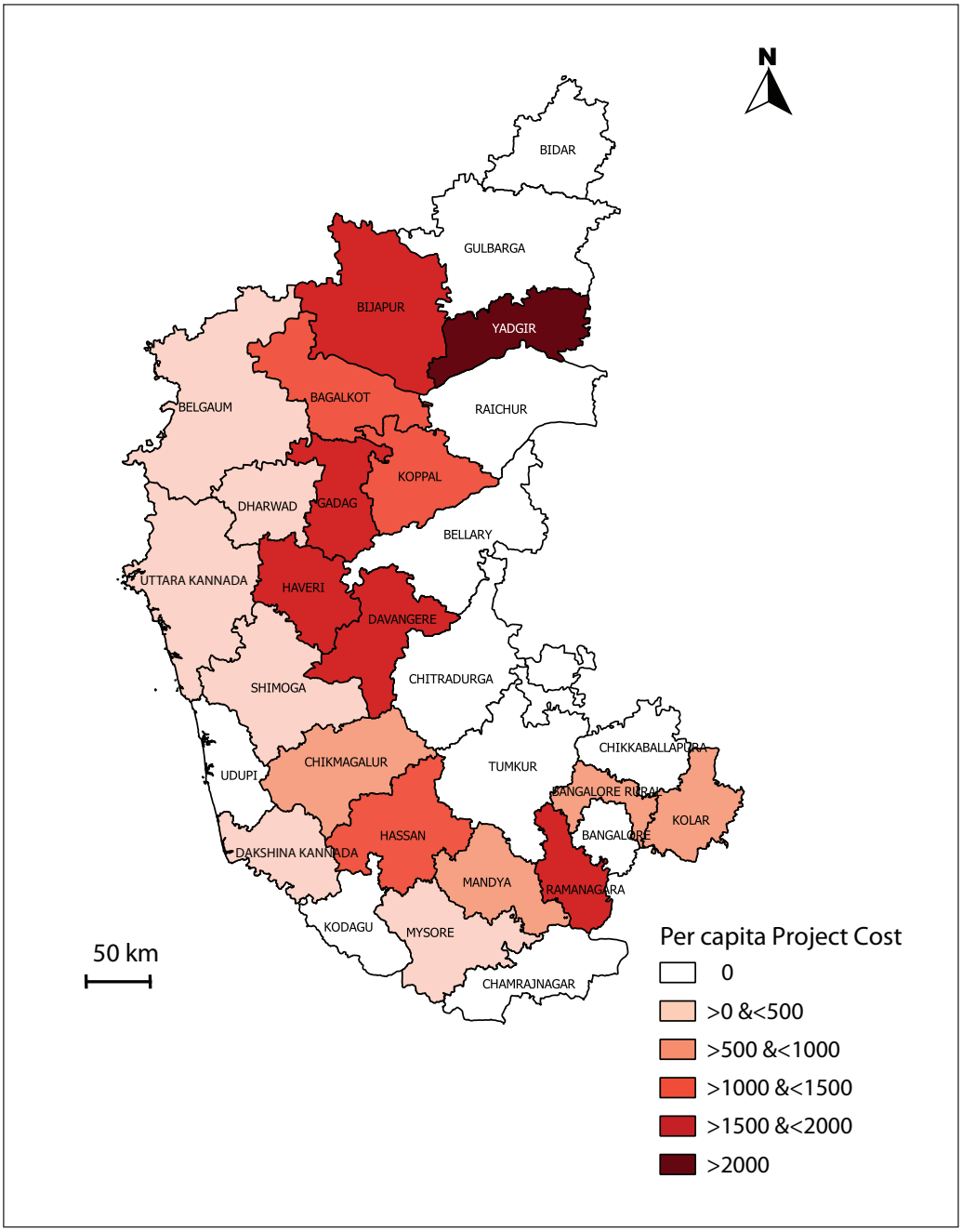
| Sector | No. of Projects | Total approved cost of projects ₹ crore | % Share |
|---|---|---|---|
| Water supply | 17 | 418.06 | 61.3 |
| Underground drainage | 10 | 78.08 | 11.4 |
| Roads & drains | 8 | 113.15 | 16.6 |
| Storm water drains | 3 | 73.2 | 10.7 |
| Total | 38 | 682.49 | 100 |

Source: Department of Municipal Administration status presentation as on December 31, 2012.

Programme in its origins, it is not entirely surprising that water and drainage account for the major chunk of the 38 UIDSSMT projects spread over 30 districts. As can be seen from Table 4.9 water supply and drainage account for the bulk of the projects. Water supply alone accounts for over 60 per cent of the approved costs of UIDSSMT projects. Storm water drains and underground drainage taken together account for around 22 per cent of the approved costs of projects, with projects covering roads and drains accounting for over 16 per cent.

When compared to the choice of projects in the UIG component of JnNURM the most striking difference lies in the much lower emphasis on transport in the UIDSSMT allocations. Compared to the near-primacy given to transport projects in Mysore and Bengaluru, the only transport projects in UIDSSMT are the roads and drains projects which account for just a little over a fourth of the allocations for water projects. The dominance of water projects in the UIDSSMT is not replicated in the UIG cities, though Mysore is closer to the UIDSSMT project with 34 per cent of its UIG allocation being for water. The water sector has not received much attention in the UIG projects of Bengaluru. In the case of storm water drains too Mysore is closer to the UIDSSMT pattern than Bengaluru: allocation for storm water drain projects, at around 10% of the total approved cost, is similar in UIDSSMT and Mysore UIG projects, while in Bengaluru UIG projects it has been given more importance at 32 per cent of the total approved cost.

A number of factors influence the choice of districts and towns which are to receive UIDSSMT projects. JnNURM has some basic requirements such as the condition that funds would be provided to only those towns and cities where elections to local bodies have been held and elected bodies are in place. But beyond such necessary conditions the state governments have considerable room to prioritize towns and cities on the basis of their felt needs and take into consideration numerous factors like the existing infrastructure deficits. The nodal agency, in this case Department of Municipal Administration, is responsible for inviting projects from various ULBs or parastatal agencies, managing the funds




Map 4.1: District-wise distribution of UIDSSMT projects by per capita project cost

received from central and state governments, and distributing the funds as per the financial pattern given in the guidelines. The list of UIDSSMT projects along with their approved costs in Karnataka is given in Annexure 3.

The multiplicity of factors determining the choice of UIDSSMT projects may make it difficult to come up with a simple explanation for their location. It is quite clear from Map 4.1 that the projects are not evenly distributed across the state. As many as 10 eligible districts — Chamarajanagar, Kodogu, Udupi, Chikballapura, Tumkur, Chitradurga, Bellary, Raichur, Gulbarga and Bidar – have not received any projects while the per capita cost of projects in some other districts is quite high. And there is no apparent reason related to urbanization that explains this distribution. There are zero project districts in both the districts that are rapidly urbanizing, like Udupi, districts that are deurbanizing, like Kodagu, and districts that we have classified as being under population pressure, like Gulbarga. The case of Udupi is particularly interesting as it is getting no support for its own internal tendency to urbanize.

5

# Choice of Projects for the Poor

The discourse around JnNURM provides a significant place for providing services to the poor. This emphasis may not be apparent when we look at the allocations for the different components of the mission with the two poorly-related components – BSUP and IHSDP – accounting for just a little over a fifth of the cost of approved projects. But it can be argued that the JnNURM components were designed to create a base on which other programmes could be built. Indeed, the Rajiv Awas Yojana with its target of slum-free cities was set up to build on the JnNURM initiatives. It is thus important to take a closer look at the way the projects for the poor were conceptualised and chosen under JnNURM.

## Basic Services for the Urban Poor

JnNURM calls for an inclusive approach to the challenge of providing basic services to the urban poor. Among the original objectives was the "[p]rovision of Basic Services to Urban Poor including security of tenure at affordable prices, improved housing, water supply, sanitation and ensuring delivery through convergence of other already existing universal services of the Government for education, health and social security."[1] This approach is confirmed in the revised CDP for Bengaluru arguing that "adequate urban basic services such as water supply, sanitation, waste management

[1] Modified Guidelines for Sub-Mission on Basic Services to the Urban Poor, Ministry of Housing and Urban Poverty Alleviation. Government of India, New Delhi, February 2009, p 2.

and providing the means of mobility, particularly to the urban poor, are central to promoting environmentally sustainable, healthy and livable human settlements."[2] It goes on to point to the seriousness of this challenge by listing the difficult conditions faced by the poor including poor sanitation; high illiteracy; high drop-out rates particularly among girls; higher infant and child mortality rates; and low levels of utilization of existing services (such as maternal and child health care).

In practice, though, a considerable part of this inclusiveness is lost. The first source of loss of inclusiveness is the method used to identify the poor. The JnNURM belief that the poor can only be found in slums is fully supported by the Revised CDP for Bengaluru insisting that a "focus on slums and the inmates would basically address the issues relating to urban poor."[3] And the CDP's estimate of the number of slum households was itself lower in each version. As per the CDP prepared in 2006, the total number of slum households was 217,257, while in the revised CDP of 2009 this number had reduced to 136,486. As we have seen in Chapter 3 this complete identification of the slums with the poor is not quite valid for Bengaluru and Mysore. Significant proportions of the poor live outside slums, and it is not unknown for the slums to also house those who are not the poorest. A focus on the slums alone can then, at best, relate to only a portion of the poor.

A further scope for exclusion of the poor has been built into the JnNURM initiative concentrating on housing alone. As a result the focus of the projects was concentrated on services that could be expected to come with housing, such as water and sanitation. In Bengaluru, providing water supply to BSUP houses is expected to cost approximately ₹ 16.07 crores out of the total infrastructure cost ₹ 113.84 crores. In Mysore, providing water supply to BSUP houses is expected to cost approximately ₹ 4.32 crores out of the total infrastructure cost ₹ 70.12 crores. And since these facilities came with the JnNURM houses they did not quite address the problem in the other houses. This is a particularly serious concern in a situation where, as we have seen in Chapter 3, nearly all the houses in slums have to use either public taps or shared taps.

There should, arguably, be greater concern on the health front. JnNURM is expected to address these concerns by providing health centres. But the size of these initiatives is meagre when compared to the task at hand. In Bengaluru, providing health centres, community centres and other social infrastructure taken together to BSUP houses is expected to cost around ₹ 14.34 crores out of the total infrastructure cost ₹ 113.84 crores. In Mysore, providing health centres,

[2] Revised City Development Plan for Bengaluru, Vol III, p 10
[3] Revised City Development Plan for Bengaluru, Vol III, p 9.

community centres and other social infrastructure taken together to BSUP houses is estimated to cost only ₹ 1.99 crores out of the total infrastructure cost ₹ 70.12 crores.

It must be emphasised that these allocations were for health centres, community centres and other social infrastructure taken together. And there was a tendency to ensure community centres did not include health or education facilities. Senior officials at KUIDFC suggested that this was because it was felt that since there were government departments working on these aspects and it was not necessary to concentrate on them. KSDB officials pointed out that these community centres were constructed with the intention of providing place for numerous social activities including entrepreneurial activities like producing agarbattis. Interestingly, KSDB had to cut down even on the number of community centres it planned as the requirements of the JnNURM toolkit emerged as an additional constraint. The JnNURM toolkit specifies the size of plot required for a community centre, and there were severe constraints on the availability of land.

The minimal expenditure on health facilities must be seen in the context of the crisis of confidence that the urban poor have in the urban health system. This is perhaps most evident in the decision the poor make on where to have their children. Looking at the decisions made on this issue in Bengaluru over the preceding three years of our survey there is a general lack of faith among the poor in government hospitals. Less than a fifth of slum dwellers and well below half of the lowest asset category go to government hospitals. Being forced into the hands of more expensive private nursing homes and hospitals the poor are beginning to consider other options. As can be seen in Table 5.1 around 16 per cent of the poor have their children at home. And when they have a more stable place to stay, even if it is in a slum, close to 36 per cent of the births are at home. If we add those in slums who go back to their hometown or village for the birth, close to half the slum population of Bengaluru prefers not to use the medical facilities the city provides, whether public or private.

**Table 5.1 : Distribution of births over the preceding three years by place of birth in Bengaluru**

In per cent

| Asset Class/ Slum | Home | Hometown/ village | Private hospitals /nursing homes | Government hospitals |
|---|---|---|---|---|
| Slums | 35.7 | 10.7 | 35.7 | 17.9 |
| Poor | 15.9 | 7.2 | 33.3 | 43.5 |
| Others | 2.9 | 2.4 | 68.2 | 26.5 |
| Total | 5.1 | 3.2 | 62.4 | 29.4 |

Source: NIAS Survey 2013

Note: Poor refers to all belonging to Asset Class 1, including those belonging to this asset class who live in slums.

**Table 5.2: Proportion of children between five and 15 attending school and taking tuition**

In per cent

| Asset Class | Percentage of children attending school | | Proportion of children taking tuition | |
|---|---|---|---|---|
| | Bengaluru | Mysore | Bengaluru | Mysore |
| 1 | 98.8 | 100.0 | 14.1 | 26.0 |
| 2 | 97.8 | 98.5 | 21.1 | 33.8 |
| 3 | 98.0 | 96.5 | 21.9 | 34.1 |
| 4 | 99.4 | 97.1 | 21.1 | 35.3 |
| 5 | 98.4 | 97.0 | 21.8 | 27.7 |
| 6 | 99.2 | 94.7 | 24.0 | 36.1 |
| Total | 98.6 | 97.3 | 20.2 | 32.2 |

Source: NIAS Survey 2013

In education the situation would appear to be a little better, but only in comparison to the alarming picture on the health front. As can be seen in Table 5.2 close to 100 per cent of the children between five and 15 in both Bengaluru and Mysore are attending school. But this is still not quite the 100 per cent that it should be. More importantly the very significant proportion of children, even of the poor, who take tuition after school could be interpreted as a vote of no confidence in the quality of education provided in class. And the JnNURM response is almost non-existent. Projects that had existing educational facilities close by have not been provided with new ones in the plan. Consequently in Bengaluru, providing school buildings to BSUP houses is expected to cost barely ₹ 0.2 crores out of the total infrastructure cost ₹ 113.84 crores. In Mysore, there is no provision for school building in the on-going projects; however, there is a provision for an informal education centre at ₹ 0.19 crores.

A similar minimalist approach can be seen in the provisions for necessary infrastructure for the projects in slums, including livelihood centres and informal markets. Projects that had existing livelihood centres or informal markets close by have not been provided with new ones in the plan. As a result in Bengaluru, providing livelihood centres and informal markets to

**Table 5.3: BSUP projects undertaken by implementing agencies**

| Implementing agency | No. of projects | Total approved cost, ₹ crore | Type of projects |
|---|---|---|---|
| KSDB | 11 | 522.24 | Rehabilitation - 2<br>Construction - 9 |
| BBMP | 3 | 62.59 | Redevelopment - 3 |

Source: KUIDFC status report December 2012

BSUP houses is supposed to cost around ₹ 0.72 crores out of the total infrastructure cost ₹ 113.84 crores. In Mysore, there is no provision for livelihood centres and informal markets to BSUP houses.

Within this framework the Basic Services to Urban Poor component of the JnNURM generated 14 projects in Bengaluru. KUIDFC is the state level nodal agency for the BSUP component. In Bengaluru the slums come under two agencies. The declared slums come under the responsibility of KSDB while undeclared slums come under BBMP. As can be seen in Table 5.3 the major responsibility of slum development under JnNURM in Bengaluru is with the KSDB which has 11 projects; nine construction projects and two rehabilitation ones. The three remaining projects are all for redevelopment and come under the BBMP.

While the pattern in terms of number of units suggests a focus on construction, the picture in terms of dwelling units – a more relevant indicator – points to a clear emphasis on rehabilitation. As can be seen from Table 5.4 a total of 19,984 dwelling units were to be rehabilitated, constructed, and redeveloped under the BSUP component in Bengaluru. Nearly two-thirds of these units – 14754 units – were under rehabilitation projects.

The approved costs per dwelling unit justify this focus on rehabilitation. At ₹ 2.61 lakhs per dwelling unit for rehabilitation, these projects were substantially less expensive than construction projects that cost ₹ 4.24 lakhs per dwelling unit or resettlement projects that cost ₹ 3.47 lakhs per dwelling unit. The average cost per dwelling unit for the 19,984 units is ₹ 2.92 lakhs.

In the development strategy for slums there is a strong case for an in-situ approach. This allows for minimal displacement of the population allowing them to remain as close as before to their workplace and possible schools for their children. And an attempt was made to prefer this approach. This process was not always smooth in Bengaluru. For instance, the slum at Laxmanraonagar was proposed for in-situ development using cost effective and fast track construction technology (light weight foam concrete

**Table 5.4: BSUP projects in Bengaluru**

| Type of project | No. of Projects | No. of dwelling units | Total approved cost of projects ₹ crore | % Share | Cost per dwelling unit, ₹ lakh |
|---|---|---|---|---|---|
| Rehabilitation | 2 | 14754 | 385.45 | 65.9 | 2.61 |
| Construction | 9 | 3426 | 136.79 | 23.4 | 4.24 |
| Redevelopment | 3 | 1804 | 62.59 | 10.7 | 3.47 |
| Total BSUP projects | 14 | 19984 | 584.83 | 100 | 2.92 |

Source: KUIDFC status report December 2012

construction technology with RCC shear walls) in the approved Detailed Project Report. However, the KSCB later pointed out that there were a number of difficulties in executing the works using the fast track construction technology on Develop-Build-Transfer.[4] The slum was located in congested areas with narrow streets. The beneficiaries were also not willing to allow ground-floor construction with light weight concrete in view of its limitations for additional floor construction at later stage. It was then decided to take up the construction works by adopting conventional technology. However, the in-situ character was maintained even when the construction option was used. Indeed, in the case of construction projects too there was some success in following an in-situ strategy. Three of the nine projects were in-situ. Thus only 928 of the 3426 units have been relocated. As can be seen in Table 5.5 in-situ development accounted for 66 per cent of the dwelling units in Rehabilitation projects, 72 per cent of the Construction projects and 90 per cent of the Redevelopment projects in Bengaluru.

Mysore had a total of four BSUP projects with the number of dwelling units being 8134. This is a higher proportion of the estimated slum population than in Bengaluru, as the CDP of Mysore estimated number of households in declared slums to be 18,404. Two of these were rehabilitation projects while the other two were construction projects. In keeping with the lower cost per unit of rehabilitation projects, their share of dwelling units was higher than their share of expenditure. As

**Table 5.5: Distribution of dwelling units by in-situ projects and projects requiring relocation**

| Type of slum development | Bengaluru | | Mysore | |
|---|---|---|---|---|
| | Relocation | In situ | Relocation | In-situ |
| Rehabilitation | 5178 (34.0%) | 10036 (66.0%) | 2466 (46.6%) | 2822 (53.4%) |
| Construction | 928 (27.1%) | 2498 (72.1%) | 686 (24.1%) | 2160 (75.9%) |
| Redevelopment | 176 (9.6%) | 1648 (90.4%) | NA | NA |

Source: 21th State Level Empowered Committee (SLEC) meeting proceedings. Available at www.kuidfc.com, accessed on January 24, 2013, and KUIDFC Project Management Unit.

**Table 5.6: BSUP projects in Mysore**

| Sector | No. of Projects | No. of dwelling units | Total approved cost of projects ₹ crore | % Share | Cost per dwelling unit, ₹ lakh |
|---|---|---|---|---|---|
| Rehabilitation | 2 | 5288 | 158.51 | 61.2 | 2.99 |
| Construction | 2 | 2846 | 100.33 | 38.8 | 3.52 |
| Total BSUP projects | 4 | 8134 | 258.84 | 100 | 3.18 |

Source: KUIDFC status report December 2012

[4] 16th State Level Empowered Committee meeting held on 31st July 2010.

can be seen in Table 5.6 Rehabilitation projects were to build 5288 units or 65 per cent of the units while its share in total expenditure was 61.2 per cent.

As in Bengaluru the projects were undertaken by the Karnataka Slum Development Board and the local corporation. KSDB has undertaken three of the four projects, two rehabilitation projects and one construction project. The other construction project has been undertaken by the Mysore City Corporation at an approved cost of ₹ 52.35 crore. The overall cost per dwelling unit in Mysore is higher than that for Bengaluru mainly because the rehabilitation projects are more expensive in the former city. The cost per dwelling unit for construction projects is however lower than that in Bengaluru.

The preference for in-situ projects can be seen in Mysore as well, though the success has been a little less than in Bengaluru. This is largely because the proportion of in-situ rehabilitation projects, as can be seen from Table 5.5, is 53 per cent compared to 66 per cent in Bengaluru. In the case of construction projects, Mysore, with 76 per cent of the dwelling units being in situ, does a little better than Bengaluru with 72 per cent.

## Integrated Housing and Slum Development Programme

The challenge of developing slums is not confined to Bengaluru and Mysore. It extends not only to other large cities in Karnataka but also to much smaller towns. The Karnataka Slum Development Board estimates that there is no major difference between the proportion of population living in slums in Bengaluru and in Karnataka's other towns, taken as a whole. With KSDB estimating the slum population in Karnataka to be 40.5 lakhs there is considerable scope for slum development in the state.

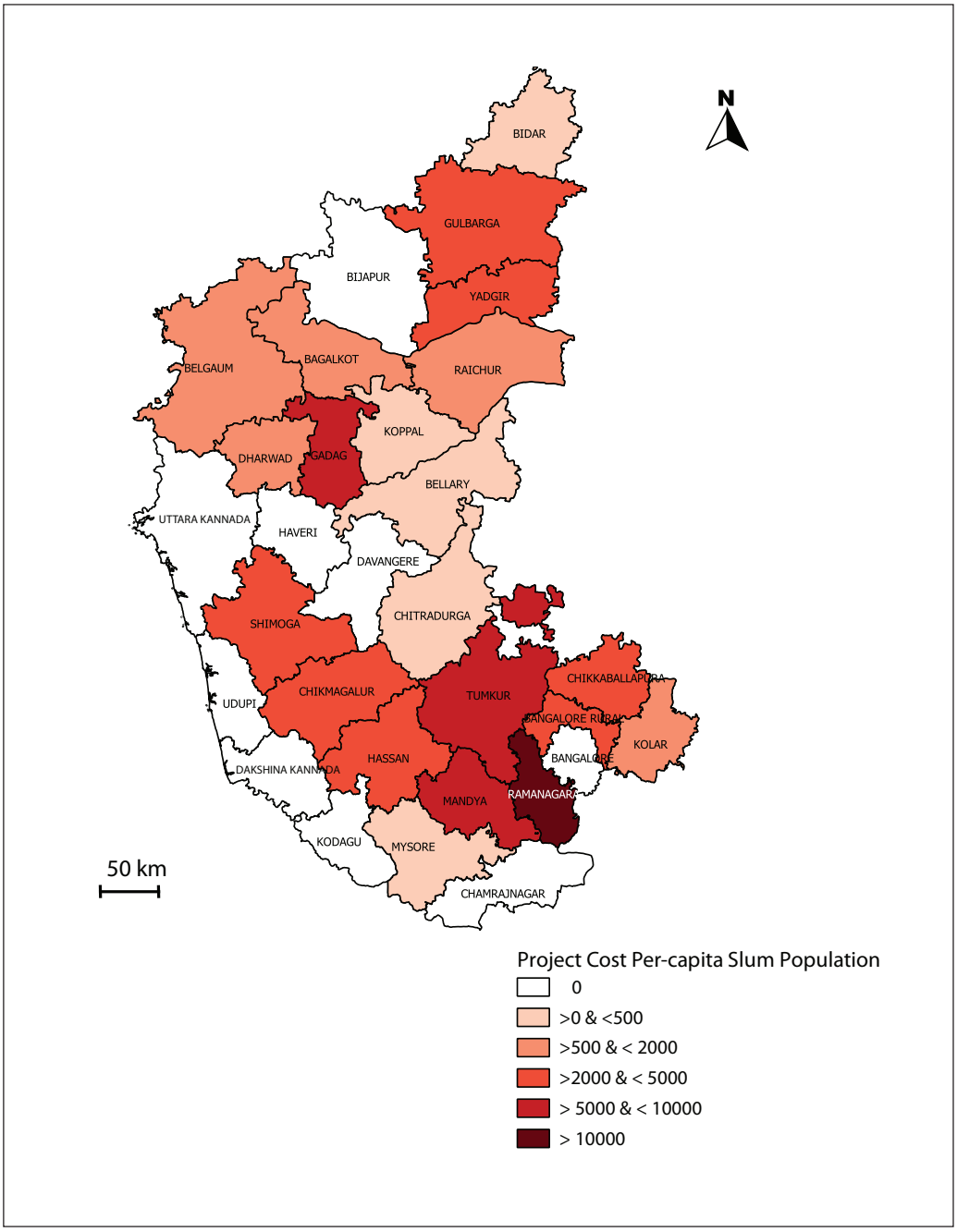
KSDB received 48 proposals for projects under the IHSDP of which 34 proposals were approved by the State Level Empowered Committee and the CSMC. In the first phase 25 projects were approved while nine projects were approved in the second phase.

As can be seen from Table 5.7 the cost per dwelling unit varies from a low of ₹ 1.68 lakh to a high of ₹ 3.41 lakh. At 1800 units, Ramanagara town, close to Bengaluru, has proposed to build the maximum number of houses at a per unit dwelling cost of ₹ 1.7 lakh. At ₹ 3.41 lakh, Pavagada has the highest cost per dwelling unit. At ₹ 1.68 lakh, Nanjanagudu in Mysore sub-division has the lowest cost per dwelling unit. Sindhanoor, Hassan, and Holenarasipura are towns which have undertaken to build 1000 dwelling units under the IHSDP. Though the conditions are not the same a point to be noted is that the average per dwelling unit cost of an

**Table 5.7: IHSDP projects in Karnataka**

| Town | No.of dwelling units | Total estimated cost, ₹ crore | Cost per dwelling unit, ₹ lakh |
|---|---|---|---|
| Mulubagilu | 600 | 11.25 | 1.88 |
| Doddaballapura | 648 | 11.52 | 1.78 |
| Gowribidanur | Infra only | 1.79 | |
| Ramanagara | 1800 | 30.57 | 1.70 |
| Siddlaghatta | 200 | 4.06 | 2.03 |
| Chintamani | 798 | 17.61 | 2.21 |
| Nanjanagudu | 540 | 9.09 | 1.68 |
| Nagamangala | 420 | 7.20 | 1.71 |
| Hassan | 1000 | 18.4 | 1.84 |
| Holenarasipura | 1000 | 18.4 | 1.84 |
| Kadur | 500 | 11.05 | 2.21 |
| Hiriyur | 123 | 3.37 | 2.74 |
| Hubli | 600 | 12.56 | 2.09 |
| Gadag-Betageri | 738 | 20.47 | 2.77 |
| Gajendragada | 500 | 8.42 | 1.68 |
| Belgaum | 138 | 2.99 | 2.17 |
| Soudatti | 145 | 2.78 | 1.92 |
| Basavakalyan | 170 | 3.03 | 1.78 |
| Bhalki | 150 | 3.35 | 2.23 |
| Gulbarga | 786 | 15.72 | 2 |
| Chincholi | 200 | 4.01 | 2.01 |
| Shahapur | 207 | 4.19 | 2.02 |
| Sindhanoor | 1005 | 20.57 | 2.05 |
| Koppal | 265 | 4.80 | 1.81 |
| Bellary | 520 | 9.56 | 1.84 |
| Kanakapura | 727 | 18.04 | 2.48 |
| Mandya | 558 | 12.96 | 2.32 |
| Bagalkot | 240 | 7.61 | 3.17 |
| Hubli, Phase-III | 109 | 3.21 | 2.94 |
| Hubli, Phase-II | 430 | 12.13 | 2.82 |
| Sira | 682 | 17.90 | 2.62 |
| Pavagada | 508 | 17.31 | 3.41 |
| Shimoga | 600 | 19.75 | 3.29 |
| Shikaripura | 330 | 10.84 | 3.28 |
| Total | 17237 | 376.66 | 2.19 |

Source: Karnataka Slum Development Board IHSDP status as on 31st March 2013.




Map 5.1: District-wise distribution of IHSDP project costs per individual living in slums

IHSDP project is lesser to that of a BSUP project in Bengaluru or Mysore. The cost per dwelling unit for construction projects in Bengaluru and Mysore is higher than the cost per dwelling unit in Pavagada (the highest among IHSDP projects in Karnataka).

As in the case of the UIDSSMT projects the distribution of IHSDP projects is also not even across the state. As can be seen in Map 5.1 there is a large contiguous belt consisting of Kodagu, Dakshina Kannada, Udupi, Uttara Kannada, Haveri and Davangere that have not received any IHSDP projects. Along with Bijapur and Charmarajnagar they constitute a set of eight districts that have not received any projects. They stand out in contrast to Ramnagara that has received the most attention. It must be pointed out that three districts Udupi, Kodagu and Chamarajnagar have been completely left out of the JnNURM process: they are not eligible for the UIG and BSUP projects and have not been given any UIDSSMT or IHSDP projects.

## Rajiv Awas Yojana

In order to build on the initiatives developed under the JnNURM further the Centre also announced the Rajiv Awas Yojana (RAY) which aimed at slum-free cities. Under RAY, central assistance is extended to States that are willing to meet certain conditions. These include assigning property rights to slum dwellers, reserving land for Economically Weaker Sections (EWS) or Low Income Groups (LIG), earmarking 25 per cent of municipal budget for basic services to the urban poor/slum-dwellers, and bringing in legislative amendments and policy changes to redress land and affordable housing shortages for the urban poor. Fifty per cent of the cost of provision of basic civic and social infrastructure and amenities and of housing, including rental housing and transit housing for in-situ redevelopment in slums, is borne by the Centre. For the North East and Special Category States the share of the Centre is 90 per cent including the cost of land acquisition, if required.

Under the preparatory phase of the Rajiv Awas Yojana an amount of ₹ 810.40 lakh has been approved for preparation of Slum Free City Plan of Action (SFCPoA) in 10 cities in Karnataka. Of the 10 cities, Hubli-Dharwad, Mangalore, Belgaum, Gulbarga, Davanagere, Bellary, Shimoga, Tumkur have finalised or completed their action plans. Only Bengaluru and Mysore are yet to finalize their action plans.

Three pilot Detailed Project Reports (DPR) in three cities have also been approved. The first is the construction of 1200 dwelling units including infrastructure at Dibbur in Tumkur city with a total project cost of ₹ 6996.48 lakh. The second is the construction of 900 houses including infrastructure at Varthur Hobli, Bengaluru with a total project cost of ₹ 5709.62 lakh. And the third is the construction of 1072 houses (ground + three floors) including infrastructure at Hubli-Dharwad.

6

# The Implementation of Projects

A mission as wide-ranging as JnNURM is best evaluated through its outcomes on the urban situation. Specific initiatives have been undertaken in the expectation that they will have clear outcomes. But before we get to the point where outcomes can be evaluated we need to first look at whether and how the projects that are the components of these initiatives have been implemented. There are then two distinct stages in evaluating the effects of JnNURM. The first step is to look at the implementation of the projects. It is only after the projects have been completed that we can move on to the question of looking at their outcomes.

The process of implementation of projects is sought to be controlled primarily through the release of funds. The first installment of 25 per cent of the Additional Central Assistance (ACA) for a project is released upon signing of a Memorandum of Agreement (MoA) by the State Government, ULB or parastatal agency. Irrespective of the number of projects, each ULB or parastatal agency signs only one MoA. This installment is a sum of 25 per cent of ACA and 25 per cent of the State Government share. As soon as the ULB or the parastatal agency spends 70 per cent of the funds released in the first installment it can submit a utilization certificate to the State Level Nodal Agency (in this case the SLNA is KUIDFC) which will then forward it to the State and Central Government. The balance amount of assistance is released in three installments upon receipt of utilization certificates to the extent of 70 per cent of the Central fund and also that of the State/ULB/parastatal agency share and subject to achievement of milestones agreed for implementation of mandatory and optional reforms at the State and ULB/parastatal agency level as envisaged in the MoA.

In the process of releasing the next installment, the nodal agencies ask the Independent Review and Monitoring Agency (IRMA) or the Third Party Inspection and Monitoring Agency (TPIMA) to review the amount of work done and submit a report so that the subsequent installment of the ACA and the State Government share can be released.

There are three stages of IRMA/ TPIMA inspection: pre-construction, construction, and post-construction. The IRMA has to submit a pre-construction report, quarterly reports during the construction stage, a trial run and completion report. The nodal agencies then appraise the quarterly progress of the project/projects to the State as well as the Central government.

Till early 2013 installments were released once the utilization certificate was submitted; this process has been changed wherein the release of funds has been tied up with the physical progress of the project. Now the second, third, and fourth installments are released only when the utilization certificate is submitted and there is 30 per cent, 40 per cent, and 60 per cent physical progress, respectively.

This process of monitoring is undoubtedly useful in preventing leakages of funds as well as monitoring the quality of the assets created. The implementing agencies have responded to these norms by seeking external assistance. They appoint a project management consultant (PMC), and in consultation with the PMC break up the project into suitable packages. Tenders for the packages are floated once the packages are finalized. These tenders are floated for both the consultant work as well as the contract work, with the work awarded to the lowest eligible bidder. The implementing agency also provides a work front to the contractor, this includes getting all requisite permissions from various departments and clearing any encroachments on the work front. The contractor can start work once the work front has been provided.

While the process of monitoring and the response of the implementing agencies are designed to play the role of an effective watchdog, they are less sensitive to delays. The scope for procedural delays is enhanced when JnNURM procedures are added on to existing procedures followed by the implementing agency. This is evident is the case of the procedures followed by the BBMP.

For projects which do not come under JnNURM, BBMP has standing committees comprising of elected representatives, for approving all activities regarding administration. Technical committees approve the technical aspects of the projects. The technical committee consists of an Executive Engineer, a Superintendent Engineer and a Chief Engineer. Any project of value up to ₹ 50 lakhs has to be approved by the commissioner; projects worth between ₹ 50 lakhs and ₹ 2 crores are approved by the Standing Committee; projects worth between ₹ 2 crores and ₹ 5 crores are approved by the BBMP Council and if the

project costs exceed ₹ 5 crores government approval is required. For tenders which cost up to ₹ 60 lakhs tender premiums up to 8 percent are approved by the Commissioner; if the cost is between ₹ 60 lakhs and ₹ 2 crores tender premiums up to 12 per cent are approved by the Standing Committee, if the cost is between ₹ 2 crores and ₹ 5 crores tender premiums up to 15 per cent are approved by the Council and if the cost exceeds ₹ 5 crores it is approved by the state government. Projects worth less than ₹ 50 lakhs are cleared by members of the Technical Committee: the Executive Engineer approves projects worth up to ₹ 20 lakhs, the Superintendent Engineer approves projects worth between ₹ 20 lakhs and ₹ 50 lakhs and projects worth more than ₹ 50 lakhs are approved by the Chief Engineer.

Draft tender schedules are prepared and uploaded on to the internet. Tenders less than ₹ 50 lakhs are chosen under one bid where only financial capability is considered whereas if it is more than Rs50 lakhs then it is under the two-bid method where technical and financial capabilities of the contractors are taken into consideration.

The supervision of the implementation of the project is ideally done within the organization. If however enough staff is not available in the organisation private project management consultants are hired for checking the quality at every stage. If further quality evaluation is required three consultants who are empanelled as third party members will carry out the work. The three consultants currently engaged by BBMP are: Kon Test House Ltd, Strut Geotech Lab, and Gooly consultants. As the work progresses bills are submitted by the contractors which are verified by the consultants and the accounts section and the funds are released. Submission of Interim reports is not a requirement.

In 2010 a PIU (Project Implementation Unit) was constituted on a contract basis to monitor, facilitate and access JnNURM projects. This team consists of a Human Resource officer, a procurement officer, an information technology officer, a municipal finance officer and a social and community development officer. This is the technical team which along with Chief Engineer's office prepares the Detailed Project Report and works to get the project sanctioned by the State Level Nodal Agency (which is KUIDFC) and SLEC (State Level Empowerment Committee). The third party IRMA approval is also required for sanctioning any project. After the projects are sanctioned tenders are floated and projects are allocated for the lowest bidding contractors and implemented. Monthly and quarterly reports are prepared and meetings are held with KUIDFC to monitor the physical and financial progress of the projects. Periodically utilisation certificates are also issued to sanction funds.

Before getting to the JnNURM stage, the projects also have to go through the approval process of the BBMP. JnNURM projects also have to acquire the approval of the Standing Committee, the Council and

the Technical Committee. The approved projects are then submitted to the Urban Development department of Government of Karnataka. It then goes to the State Level Empowering Committee which is headed by the Chief Secretary. State Level Nodal Agency which is the KUIDFC in Karnataka has been appointed as the convener by SLEC for carrying out further the procedures laid out specifically for JNNURM projects.

The numerous procedures to be followed for implementation of JNNURM projects have the potential to add to delays. In addition, the process is not adequately equipped to help identify and remove other causes of delays. And as we shall see in a while there are multiple causes for delays.

In moving on to the next stage of evaluating outcomes after projects are completed we come up against the challenge of separating the contribution of the JnNURM component to the total outcome. In cases where JnNURM resources have been used to strengthen strategies that already exist, such a separation is very difficult, if not impossible. In evaluating outcomes then we first see if the JnNURM component can be separated. In cases where this is possible this component is evaluated independently. In cases where such a separation is not possible we focus on the overall outcome that JnNURM has contributed to.

## Urban Infrastructure and Governance projects

### Transport and mobility

There are three agencies implementing projects in relation to transport and mobility in Bengaluru: Bengaluru Metropolitan Transport Corporation, Bengaluru Development Agency and Bruhat Bengaluru Mahanagara Palike. Table 6.1 tells us that the projects undertaken by the BMTC are all complete. Estimating the delays involved in their completion is not easy as information on the tender release date or award date is not available. We could however use the dates the project was approved by the Central Sanctioning and Monitoring Committee for the project and the duration of the project as per the DPR. Though none of the Traffic & Transit Management Centre projects are estimated to take more than 24 months, it can be seen from Table 6.1 that the minimum time to build a TTMC has been around two years and nine months for the Bannerghatta and Kengeri TTMCs. Discussions with consultants revealed that loose soil and the prevalence of hard rock were two important reasons for delay in the construction of the TTMCs. They argue that this cannot be accurately predicted by the soil testing done for the DPR. BMTC officials also noted that there is always a difference in estimation and actual implementation due to some changes in plans during the implementation phase.In Mysore too the project for the development of the traffic infrastructure

**Table 6.1: Implementation of projects by BMTC in Bengaluru and KSRTC in Mysore**

| Project | CSMC approval date# | Completion as per DPR* | Approved cost, ₹ crore | Total cost, ₹ crore | Project completion date # |
|---|---|---|---|---|---|
| **Bengaluru** | | | | | |
| Development of TTMC at Jayanagar | 8-12-06 | 18 months excluding monsoon (4QFY08) | 8.90 | 13.9 | July 2009 |
| Development of TTMC at Banashankari | 17-8-07 | 24 months (4QFY08) | 22.24 | 30.68 | May 2011 |
| Development of TTMC at Vijaynagar | 17-8-07 | 24 months (4QFY08) | 38.12 | 53.06 | March 2011 |
| Development of TTMC at Koramangala | 17-8-07 | 24 months (4QFY08) | 50.58 | 61.44 | March 2011 |
| Development of TTMC at Shantinagar | 17-8-07 | 24 months (4QFY08) | 84.68 | 99.8 | September 2010 |
| Development of TTMC at ITPL | 17-8-07 | 24 months (4QFY08) | 26.56 | 39.84 | December 2010 |
| Development of TTMC at Bannerghatta | 17-8-07 | 24 months (4QFY08) | 3.93 | 5.01 | May 2010 |
| Development of TTMC at Kengeri | 17-8-07 | 24 months (4QFY08) | 21.13 | 35.54 | May 2010 |
| Development of TTMC at Domlur | 23-11-07 | 24 months (4QFY08) | 15.55 | 14.97 | March 2011 |
| Development of TTMC at Yeshwanthpur | 23-11-07 | 24 months (4QFY08) | 61.32 | 79.62 | May 2011 |
| Proposal for funding of buses | 13-2-09/ 26-2-09 | | 303.07 | 319.83 | October 2010 |
| **Mysore** | | | | | |
| Development of Traffic Infrastructure system | | 24 months (4QFY08) | 85.26 | 113.5 | June-2013** |
| Purchase of buses | | -- | 45.58 | 50.46 | February-2010 |
| Intelligent Transport System and Innovative Environment Project for Mysore City | | -- | 22.7 | -- | June- 2013** |

* As mentioned in quarterly progress report noted in parenthesis. For example, 2QFY08 implies quarterly progress report for the second quarter in FY08.

#As per KUIDFC status report December 2012. ** As per KUIDFC status report May 2013.

Note: As per KUIDFC officials the work of traffic infrastructure and intelligent transport system is complete, what remains is approval of revised DPR for traffic infrastructure project, and some paper work related to release of funds from Work Bank on the intelligent transport system project.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012, KUIDFC status report May 2013.

system was delayed. The funding of buses did not of course face the same problems. This is not to suggest that there was no scope for delay in the acquisition of 1000 buses for Bengaluru and the purchase of buses for Mysore.Officials did point out that there could be delays in the release of payment by the Central Government when some required reforms were not carried out.

The delays invariably involved cost overruns. In Bengaluru only the Domlur TTMC was completed at 96 per cent of the approved cost, while there was cost escalation in all the other projects. The consultants argued that since loose soil and hard rock were not accounted for correctly in the DPR, changes in the plan required to handle these issues led to an increase in costs. In Mysore KSRTC officials said only the Chamundi hills project was delayed due to a land dispute with an individual, which was followed by litigation. Going by SLEC proceedings, there was also delay in obtaining clearances from other departments, especially the forest department.

Since the projects have all been completed it is possible to gain some insights into their outcomes for Bengaluru. The TTMCs have, in effect, three broad roles: they improve the bus terminuses; they provide parking facilities, and they are revenue generating assets that taps the real estate value of land owned by the transport corporations. With nearly 54 per cent of the built up area in the TTMCs being office space that is rented out, it is clear that tapping the real estate value of the land has been the most important outcome. Indeed, Table 6.2 tells us that the real estate component of the built up space has gone up to nearly 86 per cent in the Koramangala TTMC. The second

**Table6.2: Distribution of built up area in TTMCs in Bengaluru by use**

In per cent

| TTMC | Bus depot & bus terminus | Driveways & area development | Parking facilities | Passenger amenities and BMTC office space | Office space rented out |
|---|---|---|---|---|---|
| Jayanagar | 32.56 | 0.35 | 0.0 | 4.10 | 63.34 |
| Banashankari | 16.30 | 0.09 | 32.70 | 1.26 | 49.75 |
| Koramangala | 4.02 | 0.01 | 9.47 | 0.80 | 85.71 |
| Shantinagar | 6.68 | 0.01 | 16.74 | 12.39 | 64.19 |
| Domlur | 12.31 | 0.08 | 40.38 | 0.48 | 46.84 |
| Yeshwanthpur | 24.24 | 0.06 | 36.59 | 3.94 | 35.23 |
| Vijayanagar | 37.62 | 0.13 | 23.93 | 0.73 | 37.73 |
| Kengeri | 45.11 | 0.14 | 26.87 | 6.16 | 21.86 |
| ITPL | 8.29 | 0.03 | 23.91 | 0.74 | 67.06 |
| Bannerghatta | 31.33 | 1.14 | 0.00 | 9.75 | 58.92 |
| Total | 18.23 | 0.01 | 22.60 | 5.20 | 53.96 |

Source: BMTC

largest component for all the developed TTMCs taken together is the provision of parking facilities, with this facility accounting for nearly 23 per cent of the built up space. While providing parking space meets an important requirement of the city, it must be remembered that this too has a revenue component. With over three-fourths of the built up space being used up for parking and office space that is rented out, the TTMCs are clearly a successful exercise in creating revenue generating assets. Since over a fifth of the built up space is available for bus depots, terminuses, passenger amenities, and office space for BMTC there is a significant contribution to the smooth running of the bus system as well.

In evaluating the effect of the buses funded by JnNURM we come up against the difficulty in separating the effect of the JnNURM contribution from that of the other components of Bengaluru's bus system. The JnNURM buses were distributed across the depots of the BMTC and then merged into the regular service. Thus there is little difference between the JnNURM buses and the rest of the buses in the same segment of the system. This is evident in Table 6.3 where the mean Earnings Per Kilometre of the JnNURM Volvo buses is almost identical to that of the non-JnNURM Volvo buses.

Evaluating the impact of JnNURM is then best done by comparing the progress during the JnNURM years and a comparable number of years immediately preceding the setting up of the mission. The results of an analysis of 343 routes in Bengaluru – 146 city routes and 197 suburban routes – over six of the seven years of the JnNURM period compared to the preceding six years are presented in Table 6.4.[1] The overall pattern that emerges is

**Table 6.3 : Average earnings per kilometre of luxury buses in Bengaluru in 2010**

| Type of luxury bus | Mean EPKM (₹) |
|---|---|
| Bengaluru International Airport Service Volvo buses | 42.21 |
| JnNURM Tata Marco Polo buses | 25.76 |
| JnNURM Volvo buses | 39.37 |
| Non-JnNURM Volvo buses | 39.07 |
| Total | 37.64 |

Source: Calculated from data collected from BMTC

**Table 6.4: Growth rates in earnings per kilometre and percentage load factor during JnNURM and pre-JnNURM years**

In per cent

| Type of service | Average Earnings Per Kilometre | | Average Percentage Load Factor | |
|---|---|---|---|---|
| | 1999-2005 | 2005-2011 | 1999-2005 | 2005-2011 |
| City | 46.13 | 46.63 | 3.79 | 1.43 |
| Suburban | 42.73 | 53.16 | 6.37 | 1.90 |

Source: Calculated from BMTC data

[1] We are greateful to BM Satisha for helping access this data.

quite positive. The growth in the average earnings per kilometre was higher in the JnNURM period than in the earlier period, with the growth being much higher in the suburban routes. And if we take the percentage load factor as a sign of the congestion in buses, the picture suggests this element is coming under control. There is a noticeable decline in the growth of the average percentage load factor both in the city and the suburban bus networks.

It must be remembered, though, that JnNURM was not the only differentiating factor between the two periods. The later period was also marked by a greater recognition of the BMTC of passenger movement from one point in the periphery of the city to another. This resulted in an increase in BMTC passenger traffic on the periphery of Bengaluru. This can be seen in Figure 6.1 where the thickness of the arrows reflects the volume of passenger traffic in 2010. Clearly the movement along the IT corridor of Bengaluru from the southern periphery to the eastern periphery, and beyond to the north is now an important part of Bengaluru's public transport system. It is then no surprise that the improvement in terms of both earnings per kilometre and a de-congested percentage load factor is greater in the suburban network than within the city. But to the extent that the JnNURM initiative strengthened the response to this demand from the periphery, the Mission can take some of the credit for this success.

The long-term impact of this success would however have to be measured in terms of its ability to draw commuters away from private transport and towards public transport. A successful initiative would result in a decline in the growth rate of the cars and two-wheelers registered. The picture here is mixed both across cities and across modes of private transport. As can be seen in Table 6.5 the growth rate in the number of cars registered in Bengaluru district in the seven-year JnNURM period is 151 per cent compared to 122 per cent in the seven years preceding the launch of JnNURM. This would suggest that the luxury buses have not quite been able to get car owners in Bengaluru to rely more heavily on the public transport system. In contrast the rate of growth of two-wheelers registered in Bengaluru district has declined sharply from nearly 102 per cent the seven years preceding the launch of JnNURM to 21 per cent in the seven years of the original schedule of JnNURM. It

**Table 6.5: Growth rates in cars and two-wheelers registered in Bengaluru and Mysore districts**

In per cent

| Period | Bengaluru | | Mysore | |
|---|---|---|---|---|
| | Cars | Two-wheelers | Cars | Two-wheelers |
| 1997-98 to 2004-05 | 122.17 | 101.62 | 123.73 | 79.91 |
| 2004-05 to 2011-12 | 152.22 | 21.18 | 87.34 | 80.94 |

Source: Calculated from data collected from the Department of Statistics, Government of Karnataka and the Department of Transport, Government of Karnataka.

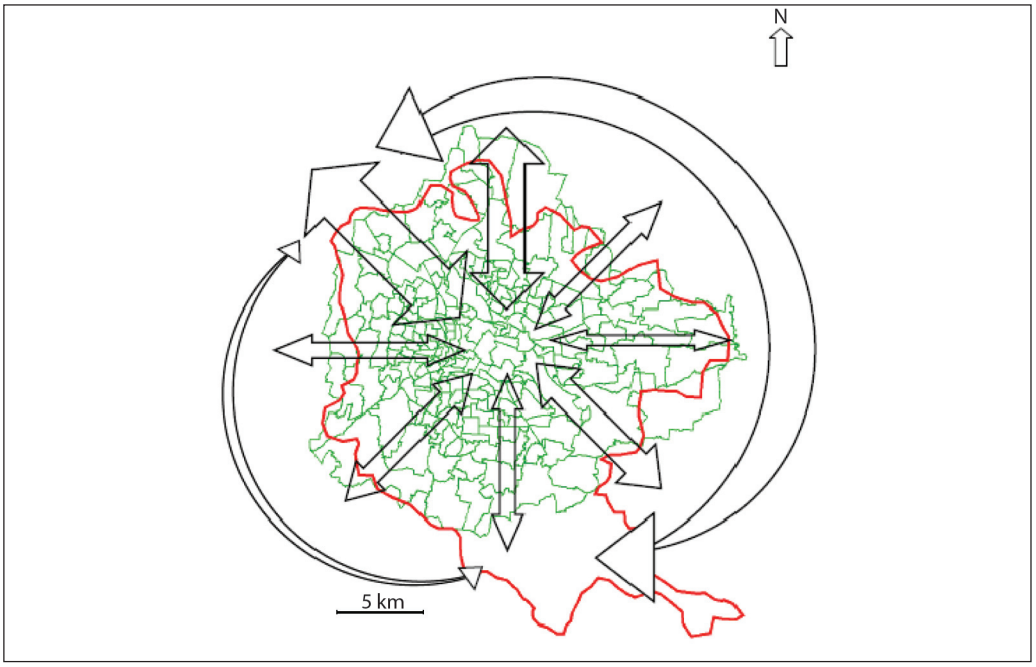



Figure 6.1: Direction and volume of movement of BMTC passengers

would appear that two-wheeler owners in Bengaluru are being drawn towards public transport. Whether this shift is being caused by the availability of luxury buses or by a better performance of ordinary buses would require further study. Mysore presents the opposite picture. The rate of growth of car owners has declined while that of two wheelers has increased, if only marginally. Any shift away from public transport in that city is occurring with car owners, while two-wheeler owners seem largely unaffected.

It is also important to note that there could be room for improvement in terms of the effect of the JnNURM initiative on the mobility of the poor. This is particularly true of Bengaluru. As Table 6.6 tells us in the lowest asset class, which accounts for around 20 per cent of the city's working population, 32 per cent of the workers walk to work. In the second lowest asset class, which accounts for around another 20 per cent of Bengaluru's

**Table 6.6: Distribution of persons going to work by means of transportation used**

In per cent

| Asset class | Walk | Two-wheeler | BMTC | Others |
|---|---|---|---|---|
| 1 | 31.7 | 3.5 | 48.9 | 15.9 |
| 2 | 28.0 | 6.3 | 50.4 | 15.3 |
| 3 | 13.4 | 43.0 | 32.8 | 10.8 |
| 4 | 12.3 | 47.4 | 24.0 | 16.3 |
| 5 | 12.6 | 50.1 | 18.1 | 19.2 |
| 6 | 4.3 | 41.6 | 9.3 | 44.8 |
| Total | 17.9 | 31.1 | 32.3 | 18.7 |

Source: NIAS Survey 2013

population, 28 per cent walk to work. The significant proportions of poorer workers walking to work have a negative impact not only on the drudgery of these workers but on the economy of the city as well. The lack of access to public transport of these workers hurts their ability to access jobs further away from their homes. This in turn hurts the availability of labour for economic initiatives across the city.

Beyond the public transport system the JnNURM initiatives in transportation in Bengaluru are primarily in improving mobility on the city's roads. Bengaluru Development Authority has undertaken three projects – two flyovers and one underpass. If we use the CSMC approval date as the starting point for the projects Table 6.7 tells us that all three projects have taken significantly longer periods to complete than was estimated in their Detailed Project Reports. This has caused the costs of all the projects to escalate quite significantly with the actual cost of the flyover at Agara junction being more than 80 per cent greater than the approved costs. It is also worth noting that the delay was greater in the flyover projects than in the single underpass project.

The BBMP had a much larger bouquet of projects aimed at improving mobility on Bengaluru's roads. And as can be seen in Table 6.8 which gives the picture on BBMP underpass projects as on December 2012, it too faced the challenge of delays and cost overruns. All the projects have been delayed. For the underpass projects it took on an average more than a year's time for a released tender to be awarded. As per the DPR, the Tagore circle under pass was supposed to be completed by March 2008 but was actually completed only in April 2012.

There has been cost escalation in four out of the five projects that were completed. The exception was the Puttenahalli underpass which was completed well within

**Table 6.7: Implementation of projects by BDA**

| Project | CSMC approval date# | Completion as per DPR* | Approved cost, ₹ crore | Total cost, ₹ crore | Project completion date # |
|---|---|---|---|---|---|
| Construction of Flyover at Agara Junction | 20-7-07 | 12 months (4QFY08) | 38.10 | 69.8 | December 2010 |
| Construction of Flyover at Iblur Junction | 20-7-07 | 12 months (4QFY08) | 18.74 | 25.99 | July 2010 |
| Construction of Underpass along Chord Road at the Junction of Magadi Road and Chord Road | 7-9-07 | 12 months (4QFY08) | 27.82 | 43.7 | February 2009 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.# As per KUIDFC status report December 2012.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012

**Table 6.8 : Underpass projects of BBMP in Bengaluru**

| Project | Tender release date* | Tender award date* | Completion as per DPR* | Approved cost, ₹ crore | Total cost, ₹ crore | Likely completion date# |
|---|---|---|---|---|---|---|
| Construction of Underpass at Malleshwaram Circle | 25-01-05 (2QFY08) | 15-12-2006 (2QFY08) | December 2007 (2QFY08) | 12.45 | 15.69 | Completed in February 2009 |
| Construction of Underpass at Tagore Circle | 25-09-07 (3QFY08) | -- | March 2008 (2QFY08) | 17.56 | 19.32 | Project completed in April 2012 |
| Construction of Underpass at Hennur-Banaswadi Road junction | 5-2-07 (4QFY08) | 10-03-08 (4QFY08) | March 2008 (2QFY08) July 2008 (3QFY08) | 25.44 | 26.97 | Project completed in December 2009 |
| Construction of Underpass at Kadirenalli-Ring Road junction | 5-2-07 (4QFY08) | 3-3-08 (4QFY08) | October 2008 (3QFY08) January 2009 (4QFY11) | 24.87 | 28.1 | Project completed in August 2012 |
| Construction of Underpass at Puttenahalli-Ring Road junction | 5-02-07 (4QFY08) | 7-03-08 (4QFY08) | October 2008 (3QFY08) March 2008 (4QFY11) | 22.84 | 20.56 | Project completed in January 2011 |
| Construction of Underpass at CNR Rao Circle | 5-02-07 (4QFY08) | 10-03-08 (2QFY10) | October 2008 (3QFY08) March 2009 (4QFY11) | 22.61 | -- | December 2013** |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.# As per KUIDFC status report December 2012.** As per KUIDFC status report May 2013.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012, KUIDFC status report May 2013.

the approved cost. It must mentioned here that there were two other underpass projects, one at RV Teachers College circle and another at Nagawara circle, on which work was started but both the projects were dropped. The RV Teachers' College underpass was dropped due to metro alignment and re-location of a temple. The Nagawara project was dropped because the water table at the site chosen for the underpass was high. Work on both the projects was initiated after the due process was followed i.e. preparation of DPR, project proposal to the SLEC and CSMC, and finally sanction from both the committees. The fact that the projects were dropped after following due process points to the possibility of these processes being less than perfect.

BBMP also undertook two road upgradation and two grade separator projects. As is evident from Table 6.9, none of the projects could be completed as per the time schedule in the DPR, with the Gali Anjaneya Temple grade separator being expected to be completed six years after the scheduled completion date. Discussions with

**Table 6.9: Road upgradation and grade separator projects of BBMP**

| Project | Completion as per DPR* | Approved cost, ₹ Crore | Likely completion date # |
|---|---|---|---|
| Upgradation of Sidewalk and asphaltic work of roads and surroundings, Koramangala | December 2007 (2QFY08) | 50.45 | Completed in August 2009 |
| Upgradation of Sidewalk and asphaltic work of roads and surroundings, M.G. Road | December 2007 (2QFY08) | 43.61 | Completed in August 2009 |
| Construction of Grade Separator Gali Anjaneya Temple Junction Circle | March 2008 (2QFY08) | 30.08 | March 2014** |
| Construction of Grade Separator at Yeshwantpur Circle | March 2008 (2QFY08) October 2007 (4QFY11) | 21.58 | Completed in April 2009 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.# As per KUIDFC status report December 2012.** As per KUIDFC status report May 2013.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012, KUIDFC status report May 2013.

the consultant for the Gali Anjaneya Temple junction project revealed that initially KSRTC wanted a direct road from the grade separator to the satellite bus stand. When this requirement was dropped the project plan had to be altered. Moreover, the contractor for the project did not use the right technology, as a result, some plans had to be altered to suit the technology used by the contractor. Realignment of the grade separator due to a metro pillar was also a part of the cause for the delay in the Gali Anjaneya Temple project.

The delays in the BBMP projects are the result of a very wide variety of reasons ranging from Lokayukta investigations to clearances from other departments. The availability and acquisition of land would appear to be the single largest cause for delay. This is not to suggest that the other causes are not a frequent impediment. As Table 6.10 makes clear, Lokayukta investigations, financing cost overruns and the absence of work fronts have contributed to delays in four projects each.

Mysore too has seen considerable delays for similar reasons. Table 6.11 tells us that the outer ring road project has been

**Table 6.10: Reasons for delay of BBMP projects**

| Reasons | No. of Projects |
|---|---|
| Lokayukta investigation | 4 |
| No funds for additional cost | 4 |
| Workfront not available | 4 |
| Land not available | 4 |
| Lack of proper work by contractor | 1 |
| Opposition/interference from local representatives | 1 |
| Land acquisition problem | 5 |
| Clearances from other departments | 3 |
| Frequent inundation | 1 |

Source: KUIDFC status report December 2012, and SLEC meeting proceedings available at www.kuidfc.com, accessed on January 24, 2013.

**Table 6.11: Implementation of Mysore ring road project by MUDA**

| Project | Completion as per DPR* | Approved cost, ₹ crore | Revised approved cost, ₹ crore | Likely completion date # |
|---|---|---|---|---|
| Upgradation of Outer Ring Road | 24 months (4QFY08) | 219.02 | 239.51 | March 2014 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08. # As per KUIDFC status report May 2013.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012, KUIDFC status report May 2013.

delayed. The outer ring road in the city also faced the problem of a missing link measuring 9.3 km. This has been included in revised DPR work and work on it is scheduled to begin shortly. As is to be expected the delay has led to an escalation in costs.

## Water and sewerage

In the case of water and sewerage projects in Bengaluru also information on the tender release date or award date was not available. This report thus estimates delay based on the CSMC approval date for the project and the duration of the project as per the DPR. When seen in these terms Table 6.12 tells us that there has been delay in the implementation of 10 of the 11 projects. One of the main reasons for delay was the time taken in obtaining clearances for the right of way from numerous departments. Land is obtained for BWSSB by BBMP or BDA. Here there were delays due to public litigation faced by BBMP or BDA. In addition, even after obtaining clearances work in congested areas typically progressed slower than planned estimates. Finally, there were delays at the level of contractors while carrying out their obligations. Information on completion as per DPR is not available for one completed project; as a result, we are not able to comment on that. The other completed project seems to have been delayed by a minimum of six months. Of the two projects that have been completed till now the picture in terms of costs was mixed. While actual costs were 129 per cent of the approved costs in one project, the other project was completed in 91 per cent of the estimated cost. The consultant of the underground drainage system project argued that the implementing agencies in their pre-feasibility report generally underestimated the time and manpower required as a result of which the DPR consultant as well as PMC faced numerous challenges in adhering to the timeline or in convincing the implementing agency of the underestimation of time and manpower.

The picture in Mysore on the implementation of water and sewerage projects is not very different from that in Bengaluru. Going by the time schedules given in the DPR, both the projects in Mysore handled by KUWSDB have been

**Table 6.12: BWSSB projects in Bengaluru**

| Project | CSMC approval date# | Completion as per DPR* | Approved cost, ₹ crore | Likely completion date # |
|---|---|---|---|---|
| Augmentation of drinking water from CWSS Stage IV Phase I by additional 100 mld for seven City Municipal Councils | 8-12-06 | -- | 12.26 | Completed in December 2007 |
| Bulk flow metering & monitoring systems for Bengaluru water distribution network | 8-12-06/ 12-7-12 | 12 months (4QFY08) | 13.7 | Completed in December 2009 |
| Environmental Action Plan (Part B) Rehabilitation of existing sewerage system in Bengaluru City | 14-2-07 | 30 months (4QFY08) | 176.75 | March 2014 |
| Underground Drainage System & Road Restoration for Yelahanka Drainage Zone-I | 7-9-07 | 24 months (4QFY08) | 15.01 | June 2013** |
| Underground Drainage System & Road Restoration for Kengeri Drainage Zone-I | 7-9-07 | 24 months (4QFY08) | 18.76 | March 2014 |
| Underground Drainage System & Road Restoration for Byatarayanapura Drainage Zone-II | 11-1-08 | 24 months (4QFY08) | 125.17 | March 2014 |
| Underground Drainage System & Road Restoration for R R Nagar | 11-1-08 | 24 months (4QFY08) | 41.54 | March 2014 |
| Underground Drainage system & Road Restoration for Mahadevpura CMC | 14-10-08 | 36 months (1QFY10) | 110.18 | March 2014 |
| Underground Drainage system & Road Restoration for Dasarahalli CMC | 14-10-08 | 36 months (1QFY10) | 136.57 | September 2013 |
| Underground Drainage system & Road Restoration for K R Puram CMC | 14-10-08 | 36 months (1QFY10) | 87.89 | March 2014 |
| Underground Drainage system & Road Restoration for Bommanahalli CMC | 14-1-09 | 36 months (1QFY10) | 231.75 | March 2014 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.# As per KUIDFC status report December 2012.** As per KUIDFC status report May 2013

Note: As per KUIDFC officials the work in Yelahanka is complete what remains is the process of getting the revised DPR approved.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012. KUIDFC status report May 2013

delayed. As there is no information on cost escalation till December 2012, we take it in Table 6.13 that there is no escalation in the estimated cost. Discussions with consultants for the distribution network project revealed that one of the sanctioning committees approved the project on the condition that the water supply would be 24/7. This was in contrast to the existing situation of supply of water which was once in two days. As a result, KUWSDB completed all the work under the project except the distribution part of the project. The consultant informed us that installing of meters is currently being undertaken before the 24/7 supply could begin. In addition there were delays due to the extra time taken in preparing the DPRs for these projects and the problems in acquiring land for the augmentation project.

### Storm water drains

As we have seen in Chapter 4 storm water drain projects form an important part of the UIG component of the JnNURM in Bengaluru and a much less significant part in Mysore. The projects in Bengaluru have had to overcome several obstacles. This has taken its toll both on the time schedules of the projects as well as their cost. As can be seen from Table 6.14 the Hebbal valley project as per its initial DPR was supposed to be completed by December 2008. This was changed to March 2011 in the revised DPR, which was later changed to March 2013. The implementing agency now expects the work to get over by March 2014. As a result the cost of the Hebbal valley project has also escalated by 46 per cent. This also is the case with the Vrishabhavathy valley and Koramangala valley, with the cost escalation being more than 84 per cent in the case of Vrishabhavathy valley. It must be mentioned that though there has been a delay in the Challaghatta valley there has been a reduction in the cost of the project. Among the causes for the delay was that the projects had to get approval before they proceeded with land acquisition. The real estate boom in 2005 made many landowners reluctant to give up their land for the compensation offered by BBMP. Moreover, many slum dwellers were given land in areas where the storm water drain was planned. In

**Table 6.13: Implementation of UIG projects by KUWSDB**

| Project | Completion as per DPR* | Approved cost, ₹ crore | Likely completion date # |
|---|---|---|---|
| Remodeling of water supply distribution network, automation and integrated management system for Mysore | 30 months (4QFY08) | 194.54 | March 2014 |
| Augmentation of water supply to Mysore city with Kabini River as source | 24 months (1QFY10) | 108.82 | December 2013 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08. # As per KUIDFC status report May 2013.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report May 2013.

order to meet the higher costs BBMP had to request the Government of Karnataka for assistance, which resulted in further delay. Also, getting labour to work in the unavoidable unhygienic conditions was a serious problem. Many labourers fell ill working on the project, adding to the human and financial costs. The contractor wanted this increase in cost to be given by the IA or the government. As a result, many contractors stopped work on the project. The MUDA project for remodelling storm water drains in Mysore has also been delayed.

**Table 6.14: Storm water drain projects of BBMP in Bengaluru and MUDA in Mysore**

| Project | Completion as per DPR* | Approved cost, ₹ crore | Revised approved cost, ₹ crore | Likely completion date # |
|---|---|---|---|---|
| **Bengaluru** | | | | |
| Remodelling of primary & secondary Storm Water Drains (SWD) in Hebbal Valley | a) December 2008 (2QFY08)<br>b) March 2011 (Revised DPR) (4QFY11)<br>c) March 2013 (Revised DPR) (1QFY12) | 184.74 | 269.98 | March 2014 |
| Remodelling of primary & secondary storm water drains at Vrishabhavathy Valley including Kethamaranahalli & Arkavathy and Kathriguppa Minor Valley | a) December 2008 (2QFY08)<br>b) March 2013 (Revised DPR) (1QFY12) | 228.26 | 420.89 | March 2014 |
| Remodelling of Primary & Secondary Storm Water Drains (SWD) in Koramangala Valley | a) December 2008 (2QFY08)<br>b) March 2012 (Revised DPR) (4QFY11)<br>c) March 2013 (Revised DPR) (1QFY12) | 111.49 | 128.58 | March 2014 |
| Remodelling of Primary & Secondary Storm Water Drains (SWD) in Challaghatta Valley & 1 Minor Valley | a) December 2008 (2QFY08)<br>b) March 2011 (Revised DPR) (4QFY11)<br>c) March 2013 (Revised DPR) (1QFY12) | 118.57 | 105.93 | March 2014 |
| **Mysore** | | | | |
| Remodeling of storm water drains | 30 months (1QFY10) | 125.00 | | September 2013** |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.# As per KUIDFC status report December 2012. ** As per KUIDFC status report May 2013.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012, KUIDFC status report May 2013

### Other projects

The Mysore City Corporation has taken up a number of projects including one on solid waste management. The solid waste management project has been delayed by more than two years. This delay may require more detailed analysis as the land required for secondary storage, compost treatment, and landfill facility was in the possession of MCC. The MCC is also overseeing the heritage core and urban renewal project, under which improvements to roads around the palace, duct and drains works, and construction of tonga stands are being carried out. Work here also includes construction of basement parking and external development of the town hall which includes excavations, retaining wall casting and centering works. Internal development of town hall which includes dismantling and false ceiling work has been completed. Under the internal work plumbing and flooring works are also being carried out. The heritage project has also been delayed.

The final UIG project, Water Management through Surface and Rainwater Harvesting at Sri Chamarajendra Zoological Gardens is being undertaken by the Zoo Authority of Karnataka. The approved cost of this project is ₹ 3.3 crores.

## Urban Infrastructure Development Scheme for Small and Medium Towns Projects

The UIDSSMT projects in Karnataka are implemented by different agencies depending on the nature of the project. The water supply and sewerage projects are implemented by the Karnataka Urban Water Supply and Drainage Board, while the projects for roads, drains, and storm water drain projects are handled by the concerned urban local body. In Karnataka there were 38 projects sanctioned under the UIDSSMT at various points of time. As can be seen in Table 6.15, 23 of the 38

**Table 6.15: Year wise approval of UIDSSMT projects by SLSC**

| SLSC date | Water Supply | UGD | Roads & drains | SWD | Total |
|---|---|---|---|---|---|
| 1st SLSC, 2/ Nov/2006 | 4 | 6 | 1 | 1 | 12 |
| 2nd SLSC, 15/ Feb/2007 | 3 | 3 | 3 | 2 | 11 |
| 3rd SLSC, 14/ Aug/2007 | 10 | 1 | 4 | -- | 15 |

UGD- Underground drainage, SWD- Storm water drains

Source: Department of Municipal Administration status presentation as on December 31, 2012.

**Table 6.16: Physical progress of UIDSSMT projects in Karnataka**

| ULB name | Project | Total approved cost, ₹ crore | Financial expenditure, ₹ crore | Physical progress (%) | Likely completion date |
|---|---|---|---|---|---|
| Birur | Water supply | 13.39 | -- | 70 | December 2013 |
| Siddapura | Water supply | 5.25 | 7.22 | 100 | Completed |
| Hirekerur | Water supply | 16.17 | 18.11 | 100 | Completed |
| Davanagere | Water supply | 3.56 | 4.02 | 80 | December 2012# |
| Davanagere | Sewerage | 3.36 | 3.03 | 80 | March 2013* |
| Davanagere | Storm water drains & drains | 50.6 | 40.25 | 90 | March 2013* |
| Davanagere | Roads | 31.28 | 32.39 | 95 | March 2013* |
| Pandavapura | Sewerage | 6.02 | 6.13 | 70 | December 2013 |
| Srirangapatna | Sewerage | 5.22 | 5.84 | 70 | December 2013 |
| Nanjangud | Sewerage | 9.75 | 10.82 | 65 | January 2014 |
| Malavalli | Sewerage | 7.3 | 6.14 | 60 | January 2014 |
| Channapatna | Sewerage | 13.11 | 7.16 | 55 | March 2014 |
| Hubli-Dharwad | Water supply | 9.9 | 11.96 | 95 | November 2012* |
| Hubli-Dharwad | Roads | 4.14 | 6.8 | 100 | Completed |
| Ramanagara | Roads & drains | 17.41 | 17.81 | 100 | Completed |
| Ramanagara | Storm water drains | 14.6 | 3.3 | 50 | March 2013* |
| Shikaripura | Sewerage | 13.17 | 14.23 | 75 | December 2013 |
| Holenarasipura | Roads & drains | 20.24 | 18.7 | 70 | March 2013# |
| Holenarasipura | Sewerage | 3.03 | 2.9 | 70 | March 2013* |
| Holenarasipura | Water supply | 0.9 | 1.12 | 100 | Completed |
| Holenarasipura | Storm water drains | 8 | 8.8 | 96 | Completed |
| Basavana Bagewadi | Sewerage | 8.44 | 7.41 | 70 | March 2013# |
| Yargol | Water supply | 79.93 | 68.42 | 68 | March 2014 |
| Mulbagalu | Water supply | 18.95 | -- | Not started[a] | -- |
| Kerur | Water supply | 11.73 | 13.59 | 70 | May 2013 |
| Soundatti | Sewerage | 8.68 | 1.7 | 50 | December 2014 |
| Mundgod | Water supply | 3.77 | 5.01 | 100 | Completed |
| Bijapura | Water supply | 62.78 | 65.17 | 90 | July 2013# |
| Chikkodi | Water supply | 20.4 | 21.52 | 80 | June 2013# |
| Hunagunda-Ilkal-Kustagi | Water supply | 58.21 | 67.39 | 80 | November 2013 |
| Mulki | Roads | 2.14 | 2.13 | 100 | Completed |

**Table 6.16: Continued**

| ULB name | Project | Total approved cost, ₹ crore | Financial expenditure, ₹ crore | Physical progress (%) | Likely completion date |
|---|---|---|---|---|---|
| Gajendragad-Naregal | Water supply | 36.32 | 24.36 | 60 | December 2013 |
| Vijayapura | Water supply | 11.09 | -- | 50 | December 2013 |
| Shirahatti-Mulagunda | Water supply | 25.96 | 29.2 | 83 | November 2013 |
| Shiggaon-Savanur-Bankapura | Water supply | 39.76 | 35.73 | 65 | March 2014 |
| Harihara | Roads & storm water drains | 24.22 | 20.65 | 65 | March 2013* |
| Chennagiri | Roads & drains | 6.21 | 6.22 | 100 | Completed |
| Konnur | Roads & drains | 7.51 | 4.13 | 70 | March 2013* |

Note: * implies work not completed, # implies work is complete/commissioned, '@' work not started, as on June 2013 as per DMA officials.
Source: Department of Municipal Administration status presentation as on December 31, 2012.

projects were approved in 2006-07, while the other 15 projects were approved by the second quarter of 2007-08.

According to information provided by the Directorate of Municipal Administration as on December 31st 2012, work had commenced on all but one water supply project. As can be seen in Table 6.16, nine of the 38 projects have been completed. Except the Mulbagalu project, in terms of physical progress, all projects are at least half complete. Of the remaining projects, only six projects are expected to go into 2014, with the rest of the projects expected to be completed by the end of 2013. The cost of eight of the nine completed projects has escalated. It must also be noted that most of the yet to be completed projects show signs of cost escalation.

Discussions with DMA officials reveal that the reasons for the delay in UIDSSMT projects are not fundamentally different from those affecting UIG projects. The absence of coordination between agencies is a serious problem with UIDSSMT projects as well. There were land acquisition problems in Nanjangud and Shikaripura, which led to litigation in the High Court of Karnataka. In the sewerage project for Nanjangud, a priest filed a case arguing that the compensation offered for land was low compared to that offered for the Mysore airport project. Finally, Government of India did not release funds for 12 projects in 2009, which was also a reason for delay. But there were also more local factors affecting some projects.In Channapatna and Nanjangud the local representatives were not interested in the sewerage projects, they were insisting on roads and water projects.

## Projects for Basic Services to the Urban Poor

### Bengaluru

The work on slums in Bengaluru under the Basic Services to Urban Poor component of the JnNURM was handled either by the BBMP or the KSDB. And in both cases the process was marked by considerable delays. Table 6.17 provides a picture of the extent of delay in the implementation of BSUP projects by BBMP. Litigation and land acquisition were the two important reasons for delay in the completed project. Among the reasons for the delay in the other, yet to be completed, projects are land litigation,non-cooperation by existing slum dwellers,and delay in inter-departmental transfer of land.

Table 6.18 shows us that all 11 projects undertaken by KSDB have been delayed due to a variety of reasons. KSDB officials said that in many projects it took more than two years to convince people to accept accommodation on higher floors. Getting land for transit accommodation close to the slums also delayed the projects. There were also location specific problems. For example, slums in low lying areas or quarries had to be dealt with appropriately, which took time. In the rehabilitation of the 28-slums project the approved cost has already been exceeded by 38 per cent.

In Mysore three of the four BSUP projects were undertaken by KSDB while the other remaining project was handled by MCC. Table 6.19 points to the delays in the rehabilitation projects among those undertaken by KSDB, with the 20-slums project being delayed by at least three years, and the 46-slums project by at least four years. Among the reasons for the delay is the need to change the location of the slums. In the 20-slums project three locations were dropped and one new location was included when a revised DPR was submitted to the CSMC in 2011. Though the exact duration of the construction project is not available,

**Table 6.17: Implementation of BSUP projects by BBMP**

| Project | Completion as per DPR* | Approved cost, ₹ crore | Revised approved cost, ₹ crore | Likely completion date # |
|---|---|---|---|---|
| Redevelopment of 5 identified slums | March 2008 (2QFY08) | 9.73 | 10.1 | Two slums completed in November 2011<br>Three slums to be completed by March 2014. |
| Redevelopment of 16 slums | March 2008 (2QFY08) | 52.86 | -- | March 2014 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.# As per KUIDFC status report May 2013.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012, KUIDFC status report May 2013.

**Table 6.18: Implementation of BSUP projects by KSDB**

| Project | CSMC approval date[#] | Completion as per DPR*[$] | Approved cost, ₹ crore | Likely completion date [#] |
|---|---|---|---|---|
| Rehabilitation of 28 slums in Bengaluru City | 28-11-06/ 10-3-11 | March 2009 (4QFY08) | 189.17 | March 2014 |
| Rehabilitation of 16 slums in Bengaluru City | 28-11-07/ 10-3-11 | 15 months | 124.28 | March 2014 |
| Construction of 464 DUs at Challaghatta | 21-1-09 | 15 months | 19.19 | March 2014 |
| Construction of 100 DUs at Bhovi Colony AK Colony, SG Palya | 30-1-09 | 12 months | 3.05 | Completed in December 2011 |
| Construction of 208 DUs at Hakkipikki colony | 30-1-09 | -- | 10.03 | December 2013 |
| Construction of 310 DUs at Laxmanarao Nagar | 30-1-09/ 30-8-11 | 12 months | 9.45 | December 2013 |
| Construction of 208 DUs at Nagareshwara Nagenahalli | 30-1-09 | 12 months | 9.84 | September 2013 |
| Construction of 320 DUs at Vinobha slum, Ambedkar slum, Munirayappa slum | 30-1-09 /30-8-10 | 12 months | 14.99 | December 2013 |
| Construction of 256 DUs at Bheemanakuppe | 30-1-09 /30-8-10 | 12 months | 11.84 | September 2013 |
| Construction of 880 DUs at Bhuvaneshwarinagar | 21-2-09 | 12 months | 37.68 | March 2014 |
| Construction of 480 DUs at Kanteeravanagar, 100 DUs at Rajeevanagar, and 100 DUs at Govindarajnagar. | 21-2-09/ 28-2-12 | 12 months | 20.72 | December 2013 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.[#] As per KUIDFC status report May 2013.[$] As per minutes of CSMC meeting

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012. KUIDFC status report May 2013. CSMC minutes available at https://jnnurmmis.nic.in/ShowSanctionsReport.aspx, accessed May 2013

given the usual time taken for such projects it can be stated that it too has been delayed. This increase in cost was primarily due to the change in technology from monolithic shear wall to conventional technology. This change in technology was necessitated by the fact that the monolithic technology involves a lot of pre-engineered imported formwork, which increases the requirement of skilled labour and a competent project management system.

The fourth BSUP project in Mysore undertaken by MCC involved constructing 1806 dwelling units. This BSUP project too was delayed.

As some of the projects have been completed it is useful to get an idea of the impact of JnNURM by comparing the

**Table 6.19: Implementation of BSUP projects by KSDB**

| Project | Completion as per DPR* | Approved cost, ₹ crore | Revised approved cost, ₹ crore | Likely completion date # |
|---|---|---|---|---|
| Rehabilitation of 20 slums | 24 months (4QFY08) | 45.28 | 67.58 | March 2014 |
| Rehabilitation of 46 slums | 12 months (4QFY08) | 90.93 | -- | March 2014 |
| Construction at Ekalavya Nagar slum | -- | 47.77 | 47.98 | September 2013 |

* As mentioned in quarterly progress report noted in parenthesis. For example 2QFY08 implies quarterly progress report for the second quarter in FY08.# As per KUIDFC status report May 2013.

Source: Quarterly Progress Report – various issues, available at http://bbmp.gov.in/, accessed January 2013; KUIDFC status report December 2012, KUIDFC status report May 2013.

conditions in JnNURM project units with those in other slums. And the picture that emerges in terms of the effects of JnNURM on basic services to the urban poor in Table 6.20 is not very encouraging. There is very little difference in terms of the access to services between JnNURM households and households in other slums. Arguably the most striking result is that the provision of these houses does not change even the proportion of households living in rented accommodation. Those living in these dwelling units spoke of other beneficiaries who had preferred to rent out the units they were allotted. In terms of connection to sewage lines too there was not much of a difference. Four-fifth of the slum dwelling units in Bengaluru were without a functioning tap in them and the picture was not very different in the JnNURM dwelling units. This number was much lower in the slums in Mysore, at less than a fifth. And the JnNURM dwelling units had an even lower percentage of houses without a functioning tap in them. The one area where there was a noticeable difference was in the proportion of households without a ration card. The JnNURM households did much better on this score. But this was only to be expected as the allotment of these units would itself depend on the ability to access entitlements from the government.

**Table 6.20: Distribution of JnNURM houses and slum houses by specific features**

| Characteristic of dwelling unit | Bengaluru | | Mysore | |
|---|---|---|---|---|
| | JnNURM | Slum | JnNURM | Slum |
| Rented | 35.00 | 38.00 | 26.00 | 26.00 |
| With connection to sewage line | 77.00 | 72.70 | 94.00 | 98.00 |
| With no functioning tap within it | 80.00 | 81.30 | 12.00 | 18.00 |
| Households without ration card | 2.00 | 19.30 | 4.00 | 10.00 |

Source: NIAS Survey 2013

## Integrated Housing and Slum Development Programme

The implementation of the 34 projects sanctioned in Karnataka under the IHSDP brings out several unusual features. As per information on the stated parameters of IHSDP that could be obtained from KSDB, the tender release and the tender award date for a number of projects is the same. There could be various interpretations for this pattern, including perhaps the lack of good contractors who can take up the work in such towns. Again, in a few projects, tenders were already awarded before they were sanctioned by the CSMC. Despite the promptness in awarding the tenders there were considerable delays. Discussions with KSDB officials revealed a variety of reasons for the delay. Since the construction of houses and infrastructure works were taken up in-situ, the existing units had to be shifted in a phased manner, thus causing delay. In some cases the delay was due to the lack of payment of the initial deposit by slum dwellers.

A more welcome, if somewhat unexpected, feature is that the delay in the execution has resulted in cost escalation in only a few of the projects. Table 6.21 shows that the costs in only four of the 34 projects have escalated between June 2011 and March 2013.

The overall picture in terms of completion of projects is not entirely negative. As Table 6.22 tells us, 15886 of the 17237 dwelling units – 92 per cent of the dwelling units – have been completed. Among the completed units, 83.1 per cent, that is 13198 units, have been occupied by families. In terms of the total number of dwelling units planned, only 76.6 per cent have been occupied as on 31st March, 2013. It can also be seen from the table that work has not started in around 2.2 per cent of the total number of dwelling units.

**Table 6.21: Cost of IHSDP projects**

| Town | Total estimated cost ₹ crore/June 2011 | Total estimated cost ₹ crore/March 2013 | % Share (2011) | % Share (2013) |
|---|---|---|---|---|
| Mulubagilu | 11.25 | 11.25 | 3 | 3 |
| Doddaballapura | 11.52 | 11.52 | 3.1 | 3.1 |
| Gowribidanur (infra only) | 1.79 | 1.79 | 0.5 | 0.5 |
| Ramanagara | 30.57 | 30.57 | 8.2 | 8.1 |
| Siddlaghatta | 4.06 | 4.06 | 1.1 | 1.1 |
| Chintamani | 17.61 | 17.61 | 4.7 | 4.7 |
| Nanjanagudu | 8.42 | 9.09 | 2.3 | 2.4 |
| Nagamangala | 7.20 | 7.20 | 1.9 | 1.9 |
| Hassan | 16.96 | 18.4 | 4.6 | 4.9 |
| Holenarasipura | 16.96 | 18.4 | 4.6 | 4.9 |
| Kadur | 11.05 | 11.05 | 3 | 2.9 |
| Hiriyur | 3.37 | 3.37 | 0.9 | 0.9 |
| Hubli | 12.56 | 12.56 | 3.4 | 3.3 |
| Gadag-Betageri | 20.47 | 20.47 | 5.5 | 5.4 |
| Gajendragada | 8.42 | 8.42 | 2.3 | 2.2 |
| Belgaum | 2.99 | 2.99 | 0.8 | 0.8 |
| Soudatti | 2.78 | 2.78 | 0.7 | 0.7 |
| Basavakalyan | 3.03 | 3.03 | 0.8 | 0.8 |
| Bhalki | 3.35 | 3.35 | 0.9 | 0.9 |
| Gulbarga | 15.72 | 15.72 | 4.2 | 4.2 |
| Chincholi | 4.01 | 4.01 | 1.1 | 1.1 |
| Shahapur | 4.19 | 4.19 | 1.1 | 1.1 |
| Sindhanoor | 20.57 | 20.57 | 5.5 | 5.5 |
| Koppal | 4.80 | 4.80 | 1.3 | 1.3 |
| Bellary | 9.56 | 9.56 | 2.6 | 2.5 |
| Kanakapura | 18.04 | 18.04 | 4.8 | 4.8 |
| Mandya | 12.96 | 12.96 | 3.5 | 3.4 |
| Bagalkot | 7.61 | 7.61 | 2 | 2 |
| Hubli, Phase-III | 2.90 | 3.21 | 0.8 | 0.9 |
| Hubli, Phase-II | 12.13 | 12.13 | 3.3 | 3.2 |
| Sira | 17.90 | 17.90 | 4.8 | 4.8 |
| Pavagada | 17.31 | 17.31 | 4.6 | 4.6 |
| Shimoga | 19.75 | 19.75 | 5.3 | 5.2 |
| Shikaripura | 10.84 | 10.84 | 2.9 | 2.9 |
| Total | 372.65 | 376.66 | 100 | 100 |

Source: Karnataka Slum Development Board IHSDP status as on June 2011 and 31st March 2013.

**Table 6.22: Completion of IHSDP projects in Karnataka**

| Town | Total no. of DUs | Completed DUs | Occupied DUs | DUs for which work not started |
|---|---|---|---|---|
| Mulubagilu | 600 | 491 | 491 | 66 |
| Doddaballapura | 648 | 641 | 641 | 0 |
| Gowribidanur | Infra only | | 0 | |
| Ramanagara | 1800 | 1450 | 1192 | 20 |
| Siddlaghatta | 200 | 160 | 0 | 40 |
| Chintamani | 798 | 716 | 716 | 29 |
| Nanjanagudu | 540 | 533 | 352 | 2 |
| Nagamangala | 420 | 369 | 347 | 45 |
| Hassan | 1000 | 1000 | 1000 | 0 |
| Holenarasipura | 1000 | 1000 | 1000 | 0 |
| Kadur | 500 | 500 | 500 | 0 |
| Hiriyur | 123 | 121 | 121 | 0 |
| Hubli | 600 | 600 | 0 | 0 |
| Gadag-Betageri | 738 | 738 | 738 | 0 |
| Gajendragada | 500 | 486 | 486 | 0 |
| Belgaum | 138 | 138 | 138 | 0 |
| Soudatti | 145 | 145 | 145 | 0 |
| Basavakalyan | 170 | 170 | 170 | 0 |
| Bhalki | 150 | 150 | 150 | 0 |
| Gulbarga | 786 | 754 | 302 | 0 |
| Chincholi | 200 | 117 | 0 | 0 |
| Shahapur | 207 | 203 | 0 | 0 |
| Sindhanoor | 1005 | 925 | 925 | 0 |
| Koppal | 265 | 265 | 0 | 0 |
| Bellary | 520 | 501 | 501 | 0 |
| Kanakapura | 727 | 714 | 714 | 0 |
| Mandya | 558 | 100 | 100 | 146 |
| Bagalkot | 240 | 240 | 240 | 0 |
| Hubli, Phase-III | 109 | 109 | 109 | 0 |
| Hubli, Phase-II | 430 | 430 | 0 | 0 |
| Sira | 682 | 682 | 682 | 0 |
| Pavagada | 508 | 508 | 508 | 0 |
| Shimoga | 600 | 600 | 600 | 0 |
| Shikaripura | 330 | 330 | 330 | 0 |
| Total | 17237 | 15886 | 13198 | 376 |

Note: 'DU' implies dwelling unit.

Source: Karnataka Slum Development Board IHSDP status as on 31st March 2013.

## Voices from JnNURM dwelling units

"For 40 years, we have been living here. Earlier this whole place was a wet swamp. We put mud over it and leveled it, made it habitable. In 1987, there were floods here and houses were destroyed. The MLA at that time gave sheets to make houses and ₹ 2000 to each family. Now, that the plot is leveled and made ready by us, the government wants it. There were 25 families living in the slum, out of these only 15 have got allotment. The 10 families that did not get allotment have been living under the staircase for the past three years. The quarters meant for the 10 families who were left out have been given to employees of government hospitals and other government departments. The top floor of the quarters has been given illegally to them. We have complained in several departments but have got no response. These people have rented it out to others who now live here. In between we were told that 11 houses have been made in Yelahanka and that we must shift there, two people signed some documents not knowing what it was. But we refused to go so far away. This is where we were born and have lived all our lives, you cannot ask us to go to the edge of the city."

Jn

"I am 76 years old and an SC. My daughter in law was among those that didn't get an allotment. So now with five children and all of us adults there are 12 people living in this small house."

Jn

"I lived in Hubli before and was married off to my husband and came here after marriage. He used to live with his extended family. They lived on the road for two years before they got the allotment. Here also, many flats have been given for rent and the allottees are making a lot of money from this. We are paying the Sangha ₹ 100 per month for maintenance. I don't know how to compare with the earlier house, but this is very comfortable and I feel better than living in a slum."

Jn

"I am 34 years old and a Dalit. Most of the people in the flats are Dalits but if you don't have an SC certificate, then you have to pay more for the flat. I have been given this milk stand also as support from the government because of my handicap. There are four members in my house. Earlier we used to stay here in pucca houses only but in 2007, the government said they would build flats and demolished the houses. We got biometric cards and gave 30,000 to get the house. The only problem is that because the people live in one building now there are more fights between us. We should learn to not interact too much and live our own lives. Then there is peace. I have got the ground floor because of my handicap. A lot of people living on top floor are not happy they have to climb the stairs but you can't make everyone happy."

7

# The Reforms

Reform of urban governance is a critical objective of JnNURM. The conditional funding is linked to the implementation of specified reform measures. An evaluation of these reform measures would, as in the case of the implementation of projects,have two stages. We would first have to look at whether the prescribed reforms have been put in place. And in the cases where the reform measures have been implemented we can, wherever possible, look at the outcome of these reforms.

The 23 JnNURM reforms have been prioritized into two groups, those that are mandatory and those that are optional. In addition to this there are sector specific reforms. Karnataka has targeted 12 such reforms in the transport sector. The 35 reforms can further be distinguished between whether they are to be implemented at the state or ULB level. Table 7.1 provides the overall count of the different types of reforms in Karnataka.

**Table 7.1 – Number of JnNURM Reforms by type and level**

| Type of reforms | State level | ULB level | Total |
|---|---|---|---|
| Mandatory | 7 | 6 | 13 |
| Optional | 5 | 5 | 10 |
| Transport | 6 | 6 | 12 |
| Total | 18 | 17 | 35 |

In terms of the number of reforms that have been completed Karnataka has done quite well. The Ministry of Urban Development (MoUD) of the Government of India has verified that Karnataka has completed 89.6 per cent of the total reform target as on May 2013. This puts Karnataka behind only Andhra Pradesh (92.6 per cent) and Maharashtra (90.6 per cent) at the national level. In order to ensure that the reforms were implemented by the respective States,

the Centre stipulated that 10 per cent of the total share of the Central Government in the funding of projects would be released upon the fulfilment of reforms. Since Karnataka had managed to complete 89.6 per cent of the reforms, it has been approved to receive the same proportion of the pending funds.

Underlying this overall success are two issues that need attention. First, even as an overwhelming percentage of the reforms have been carried out, are the ones that have been left out the more difficult, and important, ones? In order to capture this dimension of the reform process we need to take a closer look at the reforms that have not yet been achieved. Second, how much of this reform process is attributable to JnNURM? It is possible that the reform process would have been carried out even without the conditionalities of the Mission. It is difficult to answer this question for State level reforms as all the information we have is whether the reforms have been completed or not. At the level of Urban Local Bodies however it is possible to distinguish between the two Mission cities – Bengaluru and Mysore – and the other cities in Karnataka. The reforms in the mission cities can be treated as being propelled by JnNURM and that in other cities as being a part of more local processes of governance. A comparison of reforms in the two sets of cities will then provide us a picture, howsoever hazy, of the impact of JnNURM on the process of reforms. In choosing the other cities we have kept in mind the fact that the two mission cities are from southern Karnataka. The other cities are therefore taken from three other regions of the state: the coastal region, north-west Karnataka and north-east Karnataka. The cities chosen are Mangalore, Hubli-Dharwad and Gulbarga.

## Mandatory State Level Reforms

Karnataka has completed 93.57 per cent of the State level reforms that are mandatory. The two reforms that have not been completed emphasize the dangers of just going by the overall percentages. Both the incomplete reforms relate to what is arguably the most critical area of overall reform: the creation of District Planning Committees and a Metropolitan Planning Committee for Bengaluru. The creation of these committees should help ensure that different implementing agencies do not work at cross purposes. Setting up these committees is one of the steps in the implementation of the 74th Constitution Amendment Act at the State level. While, as Table 7.2 tells us, several other important steps in the implementation of this Act have been taken, the reform process appears to have hit a road block on the constitution of these committees. In interviews with officials, it was conveyed that the reform had been pending due to the preparations for the Karnataka State elections held in May 2013. They argued that since the elections are now completed, the MPCs were expected to be con-

stituted. But there are also genuine differences on some of the provisions of the legislation that would bring these committees into being. It may well then be too sanguine to expect these committees to come into being without further debate.

The inability to set up the District Planning Committees and the Metropolitan Planning Committee had its implications for other elements of the mandatory reforms as well. The task of integrating city planning and delivery functions was left incomplete. Here again, as Table 7.3 tells us, while all other elements of reforms have been completed the task of having city plans placed before the MPC/DPC could not be done for the simple reason that these committees are yet to exist.

The clearest case of reforms that cannot be attributed to JnNURM are those reforms which had been carried out before the Mission came into being. This was true of the reforms in rent control in Karnataka. Karnataka began the process of reform of its rent laws with The Karnataka Rent Act 1999. The Act met the conditions that JnNURM was to propose six years later that are listed in Table 7.4.

The rationalization of stamp duty is an area where Karnataka has met the JnNURM targets, as is reflected in Table 7.5. What is less clear is whether the measures have led to the outcomes that were de-

**Table 7.2 - Implementation of 74th Constitution Amendment Act**

| REFORM | STATUS |
|---|---|
| a) Municipal Elections | Achieved |
| b) District Planning Committee (DPC)/ Metropolitan Planning Committee (MPC) | Ongoing |
| c) State Finance Commission | Achieved |
| d) Convergence of Urban Management Functions | Achieved |
| e) Timeline in years of when the State plans to complete the transfer of the functions | Achieved |
| f) Specify approach intended to adopt by State Government to achieve convergence of urban management functions into the functioning of ULBs, Please specify the method | Achieved |

Source: KUIDFC. All information is as on May 2013

**Table 7.3 - Integration of city planning and delivery functions**

| REFORM | STATUS |
|---|---|
| a) Resolution by Government expressing commitment to assign or associate ULBs with the city planning function | Achieved |
| b) City plans to be placed before the MPC/ DPC | Partial |
| c) Sequence of steps to integrate ULB/s with the city planning function | Achieved |
| d) Sequence of steps to integrate ULB/s with the delivery of services | Achieved |

Source: KUIDFC. All information is as on May 2013

**Table 7.4 - Rent control reforms and regulation**

| REFORM | STATUS |
|---|---|
| a) Resolution by Government expressing commitment to establish new rent control system | Achieved |
| b) Enactment of new Rent Control Act | Achieved |
| c) Defining the rights and obligations of landlords and tenants | Achieved |
| d) Establishing a new rent control legislation | Achieved |
| e) Indicate periodicity of revision of rents/rental value guidance, and when next due | Achieved |
| f) Setting up of a mechanism for periodic review of rents/rental value guidance | Achieved |
| g) Institution of dispute resolution mechanisms (e.g. Special Tribunals/ Courts etc) | Achieved |

Source: KUIDFC. All information is as on May 2013

**Table 7.5 - Rationalisation of stamp duty**

| REFORM | STATUS |
|---|---|
| a) Commitment for reduction of stamp duty to 5 per cent | Achieved |
| b) Fix the periodicity for revising the guidance value for levy of stamp duty | Achieved |
| c) Timeline to reduce stamp duty to 5 per cent | Achieved |

Source: KUIDFC. All information is as on May 2013

sired. One of the reasons cited for a reduction in stamp duty was that high stamp duties led to an undervaluation of property, leading to a decline in revenue. JnNURM documentation argued that a lower stamp duty would result in less undervaluation and hence greater revenue. It is not entirely clear that such an increase in revenue has been the outcome.

The repeal of the urban land ceiling is another area where Karnataka met the JnNURM norms, as can be seen in Table 7.6. But here again this was achieved well before JnNURM was initiated. The reforms related to community participation as well as public disclosure have also been carried out, as can be seen in Tables 7.7 and 7.8. The actual outcomes of these measures will have to be studied.

**Table 7.6 - Repeal of urban land ceiling**

| REFORM | STATUS |
|---|---|
| a) Repeal of ULCRA to increase supply of land and to establish an efficient land market | Achieved |
| b) The State legislature to pass a resolution in compliance with the repeal of ULCRA Act passed by the Parliament in 1999 | Achieved |
| c) Notification of the above by Government of Karnataka | Achieved |

Source: KUIDFC. All information is as on May 2013

**Table 7.7 - Enactment of community participation law**

| REFORM | STATUS |
|---|---|
| a) Resolution by Government expressing commitment to establish a new community participation law | Achieved |
| b) Indicate the changes you propose to make in your JnNURM city/cities and the timeline for these changes | Achieved |
| c) Proposed activity-mapping of functions in community participation law (for each of the functions of the Municipality) | Achieved |
| d) Enactment of community participation law | Achieved |
| e) Notification of rules on community participation law | Achieved |
| f) Interim process for community participation in municipal functions while community participation law is being enacted and notified. Please indicate if there are any steps being taken by the Municipality to create opportunities for community participation while the community participation law is being enacted | Achieved - Citizen's Committees have been formed |

Source: KUIDFC. All information is as on May 2013

**Table 7.8 - Enactment of public disclosure law**

| REFORM | STATUS |
|---|---|
| a) Resolution by Govt/ ULB to formulate and adopt a policy of public disclosure | Achieved |
| b) Indicate information disclosure that is implemented and the timeline | Achieved |
| c) List the information proposed to be disclosed by ULBs / parastatal agencies on a regular and mandatory basis | Achieved |
| d) List the services for which service levels information is proposed to be disclosed | Achieved |
| e) Year from which service levels information will regularly disclosed | Achieved |
| f) Time scheduled for enactment of public disclosure law | Achieved |
| g) Time scheduled for notification of the rules pertaining to the public disclosure law | Achieved |

Source: KUIDFC. All information is as on May 2013

## Mandatory ULB Level Reforms

The JnNURM cities have had ULB-level reforms implemented as per government directives. Both Bengaluru and Mysore have managed to complete 92.5 per cent of the mandatory reforms designated for ULBs under JnNURM. Here again we need to take a closer look at the specifics of the reform measures that have been completed to evaluate their impact.

### E-Governance

The two Mission cities of Bengaluru and Mysore have achieved all the e-Governance elements prescribed in JnNURM. In terms of these specific measures the record of the three non-JnNURM cities would appear to be quite poor. They have made only partial progress in preparing their Municipal e-Governance Design Doc-

**Table 7.9 - Implementation of mandatory e-Governance reforms**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGA-LORE | HUBLI - DHARWAD | GULBAR-GA |
| a) Appointment of State-level technology consultant as State Technology Advisor | Achieved | Achieved | NA | NA | NA |
| b) Preparation of Municipal e- Governance Design Document (MEDD) as per National Design Document/NMMP | Achieved | Achieved | Partial | Partial | Partial |
| c) Assessment of MEDD against National e-Governance Standards | Achieved | Achieved | No (State Documenta-tion used) | No (State Documenta-tion used) | No (State Documen-tation used) |
| d) Finalisation of Municipal e-Governance implementation action plan for the city | Achieved | Achieved | No | No | No |
| e) BPR prior to migration to e-Governance | Achieved | Achieved | No | No | No |
| f) Appointment of software consultants | Achieved | Achieved | No | No | Yes (Spe-cific Areas) |
| g) Exploring PPP options for different e-Governance modules | Achieved | Achieved | No | No | Yes |
| h) e-Governance NMMP Module Status | Achieved | Achieved | As below | As below | As below |
| 1) Property Tax module | 1) Achieved | 1) Achieved | 1) No | 1) Yes | 1) Yes |
| 2) Accounting module | 2) Achieved | 2) Achieved | 2) Partial | 2) Yes | 2) No |
| 3) Payment of property tax, utility bills and management of utilities under the ULBs | 3) Achieved | 3) Achieved | 3) Yes | 3) Yes | 3) Yes |
| 4) Registration and issue of births/ deaths certificate | 4) Achieved | 4) Achieved | 4) Yes | 4) Yes | 4) Yes |
| 5) Citizens' grievance monitoring | 5) Achieved | 5) Achieved | 5) Yes | 5) Yes | 5) Yes |
| 6) Personnel management system | 6) Achieved | 6) Achieved | 6) Yes | 6) Yes | 6) Yes |

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGA-LORE | HUBLI - DHARWAD | GULBAR-GA |
| 7) Procurement and monitoring of projects | 7) Achieved | 7) Achieved | 7) No – In Plan | 7) Yes | 7) Yes |
| 8) Building plan approvals | 8) Achieved | 8) Achieved | 8) No | 8) No | 8) No |
| 9) Health programs | 9) Achieved | 9) Achieved | 9) No | 9) No | 9) No |
| 10) Licenses | 10) Achieved | 10) Achieved | 10) No | 10) Yes | 10) No (Partial) |
| 11) Solid waste management | 11) Achieved | 11) Achieved | 11) No | 11) No | 11) Yes |
| 12) Setting up service centres at different locations in urban areas to provide different services under one roof | 12) Achieved | 12) Achieved | 12) Yes (Mangalore One) | 12) Yes (HD One) | 12) Yes (Gulbarga One) |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

ument (MEDD) and Gulbarga has appointed software consultants for a few areas. On all the other e-governance measures prescribed under JnNURM the other three cities have not achieved what the two mission cities have. But if we look beyond the specific steps prescribed by JnNURM at the outcomes in terms of actual e-Governance, the differences are much less stark. While several of the procedural rules stipulated are not followed in the non-JnNURM cities, we observe that most of cities have already managed to integrate information technology. Thus, several of the basic e-governance measures are already present to a large degree. For example, as Table 7.9 tells us the Hubli-Dharwad Municipal Corporation already has nine out of 12 services being operational on e-governance platforms and Gulbarga has eight.

## Municipal Accounting

Following a state-level migration to the double-entry accounting system in 2005-06, we find that all the ULBs, both JnNURM and non-JnNURM cities, already have this reform in place.Here again since the reforms were in place since the first year of JnNURM and have been implemented in both the Mission and non-Mission cities, it is not clear just how much of a role JnNURM had in this transition. It is also worth noting from Table 7.10 that the complete revamp of the Public Financial Management (PFM) cycle which includes internal control has been carried out in the three other cities but information for this process is not available for Mysore. In addition, information on the appointment of consultants for development of a state manual on Business Process Reengineering is not available either for Mysore or for the three non-JnNURM cities.

**Table 7.10 - Implementation of mandatory reforms in Municipal accounting**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) GO/Legislation/ Modification of rules for migration to double-entry accounting system | Achieved | Achieved | Yes (2006) | Yes (2005-06) | Yes (2006) |
| b) Appointment of consultants for development of State manual | Achieved | NA for Mysore | NA | NA | NA |
| c) Completion and adoption of manual | Achieved | Achieved | NA | NA | NA |
| d) Commence training of personnel | Achieved | Achieved | Yes | Yes | Yes |
| e) Appointment of field-level consultant for implementation at the city-level | Achieved | Achieved | Yes | Yes | Yes |
| f) Notification of cut-off date for migrating to the double entry accounting system | Achieved | Achieved | NA | NA | NA |
| g) Business process reengineering | Achieved | NA for Mysore | NA | NA | NA |
| h) Valuation of assets and liabilities | Achieved | Achieved | Yes | Yes | Yes |
| i) Drawing up of opening balance sheet (OBS). | Achieved | Achieved | Yes | Yes | Yes |
| j) Full migration to double entry account system | Achieved | Achieved | Yes | Yes | Yes |
| k) Production of financial statements (income expenditure accounts and balance sheet) | Achieved | Achieved | Yes | Yes | Yes |
| l) External audit of financial statement | Achieved | Achieved | Yes | Yes | Yes |
| m) Frequency of external audit | Achieved | Achieved | Annual | Annual | Annual |
| n) Preparation of outcome budget | Achieved | Achieved | Yes | Yes | No |
| o) Complete revamp of the Public Financial Management (PFM) cycle which includes internal control | Achieved | NA for Mysore | Yes | Yes | Yes |
| p) Credit rating of ULBs / Parastatal Agencies | Achieved | Achieved | Yes | Yes | No |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

**Table 7.11 - Implementation of mandatory property tax reforms**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) Extension of property tax regime to all properties | Achieved | Achieved | Yes | Yes | Yes |
| b) Elimination of exemption | Achieved | Achieved | Yes (Except Religious/ Halls) | Yes (Except Religious/ Halls) | Yes (Except Religious/ Halls) |
| c) Migration of self-assessment system of property taxation | Achieved | Achieved | No | Yes | Yes |
| d) Setting up a nondiscretionary method for determination of property tax | Achieved | NA for Mysore | No | Yes | No |
| e) Use of GIS-based property tax system | Achieved | Achieved | Partial (~70%) | Yes | Partial (~90%) |
| f) Next revision of guidance values | Achieved | NA for Mysore | No | Three years | No |
| g) Fix periodicity for revision of guidance values to be adopted | Every two Years | NA for Mysore | No | Three years | No |
| h) Establish taxpayer education programme | Achieved | Achieved | Yes | Yes | Yes |
| i) Establish dispute resolution mechanism | Achieved | Achieved | No | Yes | No |
| j) Rewarding and acknowledging honest and prompt taxpayers | Achieved | Achieved | Yes | Yes | Yes |
| k) Achievement of 85% coverage ratio | Achieved | Achieved | Yes | Yes | Partial (~ 80%) |
| l) Achievement of 90% collection ratio | Achieved | Achieved but varies year to year | Partial (~85%) | Yes | Partial (~ 80%) |
| m) Improvement in collection of arrears, to reach total outstanding arrears less than or equal to 10 per cent of current demand for previous year | Achieved – Ongoing | Achieved | No (~13 %) | NA | NA |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

## Property tax

In the reforms in property tax there is some difference between Bengaluru and Mysore. While Bengaluru has achieved all the reforms that have been set out, a confirmation of the same is not available for Mysore. As can be seen in Table 7.11, this confirmation is not available in Mysore's case for three specific reform measures: setting up a non-discretionary method for determination of property tax, the next revision of guidance values, and fixing the periodicity for revision of guidance values to be adopted. On the whole the performance of the Mission cities in reforming the property tax regime is not much better than that of the other three cities. On the contrary, there are specific elements like those related to guidance values where Hubli-Dharwad has done better than Mysore. It is difficult then to attribute the implementation of property tax reforms at the ULB level entirely to JnNURM.

Comparing the official perception of the implementation of the property tax regime with the perceptions that emerge from the ground throws up some interesting results. This is particularly true of the need to achieve a 90 per cent ratio in the collection of property tax. The picture that emerges from the ground is that this condition has been met in all the cities and towns surveyed with the exception of Bengaluru. Though the official view is that the 90 per cent target has been achieved, nearly a quarter of the house owners in the metropolis said they did not pay property tax. Equally striking is the fact that both Mangalore and Gulbarga may have done better than their officials believe. It is also important to note from Table 7.12 that the proportion of those saying they do not pay property tax is typically higher in the cities when compared to the towns. Mysore has 7 per cent saying they do not pay property tax while its neighbouring town, Nanjangud has 5.7 per cent. A similar pattern is evident when we compare Gulbarga with Shahbad in the same district, and Mangalore with the nearby Mulki.

**Table 7.12 - Proportion of house owners in different cities admitting to not paying property tax**

| City/Town | Proportion of house owners saying they do not pay property tax |
|---|---|
| Bengaluru | 23.4 |
| Dharwad | 2.1 |
| Gulbarga | 3.8 |
| Mangalore | 1.2 |
| Mulki | 0.0 |
| Mysore | 7.0 |
| Nanjangud | 5.7 |
| Shahbad | 0.0 |

Source: NIAS Survey 2013

## User charges

An important target of JnNURM reforms is to ensure users are made to meet at least the operation and maintenance cost of the services they use. The JnNURM reform guidelines require ULBs to recover cent per cent of the O&M costs of services like water supply and solid waste management through higher efficiency in supply of services as well as in the collection of receipts. The reforms

**Table 7.13 - Implementation of mandatory reforms on user charges**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGA-LORE | HUBLI - DHARWAD | GULBARGA |
| a) Formulation and adoption of policy on user charges by the State/ULB | Achieved | Achieved | Yes | Yes | Yes |
| b) The state should set up a body for recommending a user charge structure | Achieved | Achieved | NA | NA | NA |
| c) Establishment of proper accounting system for each service so as to determine the O&M costs separately | Achieved | Achieved | Yes | Yes | Yes |
| 1) Establish proper Water Supply & Sewerage accounting system to determine the O&M cost separately | Achieved | Achieved | Yes | Yes | Yes |
| 2) Establish proper Solid Waste Management accounting system to determine the O&M cost separately | Achieved | Achieved | Yes | Yes | Yes |
| 3) Establish proper Public Transport Services accounting system to determine the O&M cost separately | Achieved | Achieved | NA | NA | NA |
| d) Targeted service standards and target year for achieving the solid waste collection | Achieved | Achieved | 100% | 70% | Not Available |
| e) Plan for reduction in Non-Revenue Water (NRW) and Unaccounted for Water (UfW) through measures that include water audits and leakage detection studies. Annual targets for both. | Achieved | Ongoing | Packages to contractors - No targets | Regularisa-tion / Me-tering - No targets | Metering - No targets |
| f) Conduct of a study to quantify and examine impact of subsidies for each service (indicate 'when' against the timeline) | Not Committed | Ongoing | NA (No subsidies) | Yes (SC/ ST and BPL subsidized) | No study |

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGA-LORE | HUBLI - DHARWAD | GULBARGA |
| g) Results of such analysis to be tabled in the Municipal Council and approved (indicate 'when' against the timeline) | Not Committed | Ongoing | NA | 2-3 years | NA |
| h) Indicate periodicity in which such analysis shall be done regularly, and placed before the Municipal Council | Achieved | Ongoing | NA | 2-3 years | NA |
| i) Timetable to achieve full recovery of O&M costs from user charges (recovery of all direct costs, including related salaries and wages) | | In Mysore ULB report – Section (e) | No time-table | No time-table (One time settlement option) | No time-table |
| 1) Water supply | 1) Ongoing (~70 per cent) | 1) Ongoing (~75 per cent) | | | |
| 2) Sewerage | 2) Achieved | 2) Ongoing | | | |
| 3) Solid waste management | 3) Ongoing | 3) Ongoing | | | |
| 4) Public transport services | 4) Achieved | 4) NA | | | |
| 5) Others, such as hiring of municipal assets (community halls, public parks etc) | 5) Not Committed | 5) Not Committed | | | |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

lay out a series of steps that will help capture the O&M costs of the services being provided and to then recover these costs. Not surprisingly the first part of this process is easier to accomplish than the latter part. All the cities, both JnNURM and non-JnNURM have separate accounting systems for the services they provide. But ensuring the O&M costs are covered in the user charges for the services provided is more difficult. Bengaluru and Mysore only manage to recover around 70-75 per cent of their total costs every year. It has been pointed out that complete cost recovery is a fairly long and meticulous process and so this target is one that is under progress. But it does seem that achieving the JnNURM target on user charges is not yet on the horizon. Table 7.13 tells us that Bengaluru has not been able to commit itself to a study to quantify and examine impact of subsidies for each service, let along tabling the results of such an analysis in the BBMP. Indeed, it has not even committed to a timetable to achieve full recovery of O&M costs from user charges.

## Funds for the Poor

One area where there is a clear difference in approach between the JnNURM cities and the other cities is in organizing services for the urban poor. As Table 7.14 tells us the internal earmarking of funds for services to the urban poor follows the JnNURM specifications in the Mission cities, the other cities do not follow this norm. The earmarking of funds for the urban poor in the

**Table 7.14 - Implementation of internal earmarking of funds for services to urban poor**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) Reforms in the accounting and budgeting codes to enable identification of all income and expenditures, related to poor / non-poor | Achieved | Achieved | Partial (For SC/ST – BC – PH) | Partial (For SC/ST – BC – PH) | Partial (For SC/ST – BC – PH) |
| b) Creation of separate Municipal fund in the accounting system for "Services to the Poor" | Achieved | Achieved | -do- | -do- | -do- |
| c) Amendment to the municipal rules for governing the fund, operating the fund, rules for transfer of resources into the fund for "Services to Poor". | Achieved | Achieved | -do- | -do- | -do- |
| d) Targeted revenue expenditure on delivery of services to poor per annum, expressed as percentage of total revenue income | Achieved | Achieved | NA | NA | NA |
| e) Targeted revenue expenditure on delivery of services to poor per annum, expressed as a percentage of total own source of revenue income | Achieved | Achieved – spent more than target | NA | NA | NA |
| f) Targeted capital expenditure on delivery of services to poor per annum, expressed as percentage of total capital expenditure | Achieved | Achieved | Partial - SC/ ST – 22.75%, BC – 7.25%, PH – 3% | Partial - SC/ ST – 22.75%, BC – 7.25%, PH – 3% | Partial - SC/ ST – 22.75%, BC – 7.25%, PH – 3% |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

**Table 7.15 - Implementation of mandatory reforms on the provision of basic services to urban poor**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) The State Government and ULB must formulate and adopt, vide a resolution, a comprehensive policy on providing basic services to all urban poor which should include security of tenure and improved housing at affordable prices. The policy document should also cover other existing universal service mandates of the Government in the areas of education, health and social security. This policy document should lay down commitments to attain certain benchmark levels of access and standards of service delivery | Achieved | Achieved | No policy | No policy (Several schemes through Revenue Dept) | No policy |
| b) Conduct of household level survey of all poor settlements | Achieved | Achieved | Yes | Yes | Yes |
| c) Household level survey to cover infrastructure deficiency indicators and socio-economic deficiency indicators | Achieved | Achieved | NA | Yes | Yes |
| d) Creation of database for household level benefits schemes, such as livelihood, housing, social security etc. | Achieved | Achieved | NA | Yes | Yes |
| e) Ranking and prioritization of clusters of urban poor settlements in a participatory manner | KUIDFC awaiting update from RCUES | KUIDFC awaiting update from RCUES | NA | No | No (only BPL targeting) |
| f) Frequency of updation of database created | KUIDFC awaiting update from RCUES | Achieved | NA | According to KSDB | According to KSDB |

**Source:** KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

other cities is based on existing systems of targeting the urban poor including funding for SC/ST, Backward Classes and the physically handicapped. In the case of providing services to the urban poor too, Table 7.15 shows us that the difference remains, with the other cities laying greater stress on the role of the KSDB.

There are also parts of the services to the urban poor where mandatory reforms are pending. These reforms are related to the organisation of information regarding the urban poor in the cities of Bengaluru and Mysore. In our interactions with the KUIDFC, it was conveyed that though a study was conducted by the Regional Centre for Urban and Environmental Studies (RCUES), Hyderabad, the results had not been received. Sections of this mandatory reform are thus awaiting further inputs from RCUES.

## Optional Reforms

### Optional State Level Reforms

Karnataka has managed to complete most of the state-level optional reforms. Broadly speaking, there are only two categories of reforms that are still pending. They are the introduction of a property title certification system and earmarking of at least 20 to 25 per cent of Developed Land in all

**Table 7.16 - Introduction of property title certification system**

| REFORM | STATUS |
|---|---|
| a) Requires instituting an effective property title certification system and management of property holding | Ongoing |
| b) Listing of all the properties in the city | Ongoing |
| c) Finalisation of decisions on the new registration system, state guarantee and legislative amendments | Ongoing |
| d) Amendment of legislation and notification | Ongoing |
| e) Detailed design of system | Ongoing |
| f) Inventory of all recorded properties (after enquiry of titles and existing evidence) | Ongoing |
| g) Update of all the records to reflect current owner and preparation of a 'Register of Titles'. | Ongoing |
| h) Computerisation of all the property records against ownership. | Ongoing |
| i) Initiation of issue of Property Tax Certificate (on request) to the existing owners, accompanied by cancellation of all previous certificates | Ongoing |
| j) Setting up a system for regular upgradation of records (eg. MIS with links to all Year seven offices having bearing on land encumbrances) | Ongoing |
| k) Setting up a system for online provision of information receipt (relating to transactions), dissemination and requests for certificates | Ongoing |
| l) Timeline for achieving 100 per cent registration of properties | Ongoing |

Source: KUIDFC. All information is as on May 2013

housing projects (both public and private agencies) for the Economically Weaker Section/Low Income Group category with a system of cross subsidization.

In the case of the Property Title Certification System,though Karnataka already has a procedure for issuing and maintaining property titles, it has not managed to implement the Urban Property Ownership Records (UPOR) system across the State. As a result, even though Karnataka believes that it has achieved this reform, the MoUD does not concur. Thus, the KUIDFC marks this reform as completed while the MoUD does not mark it as completed. In view of this dispute we have classified this reform as ongoing.

The case for classifying the reform on earmarking land in housing projects for EWS or LIG households as ongoing, as has been done in Table 7.17 is clearer. A draft notification has been sent to the Government of Karnataka and is awaiting publication.

**Table 7.17 - Progress of earmarking of at least 20-25 per cent of Developed Land in all housing projects (both public and private agencies) for EWS/LIG category with a system of cross subsidization**

| REFORM | STATUS |
|---|---|
| a) Decision on the extent of reservation (20-25 per cent) | Ongoing |
| b) Amendment of the existing legislation and notification | Ongoing |
| c) Timeline to improve the percentage of reservation for EWS/LIG in housing (percentage of reservation against mission years). | Ongoing |

Source: KUIDFC. All information is as on May 2013

**Table 7.18 - Progress on simplification of legal and procedural framework for conversion of agricultural land for non-agricultural purpose**

| REFORM | STATUS |
|---|---|
| a) Finalize on modification in existing procedure to streamline & standardize the process of conversion | Achieved |
| b) Amendment of the existing legislation and notification | Achieved |
| c) Dissemination of the new process through a website | Achieved |
| d) City level workshops to address to the queries of general public | Achieved |
| e) Setting up an MIS system with links to all offices having bearing on conversion of land-use | Achieved |
| f) Establishment of interactive citizen enquiry system on the status of application for conversion of land use through methods such as –Interactive Voice Recording System (IVRS), website, telephone, etc. | Achieved |
| g) Start of conversions as per the new legislation | Achieved |

Source: KUIDFC. All information is as on May 2013

**Table 7.19 - Introduction of computerized process of registration of land and property**

| REFORM | STATUS |
|---|---|
| a) Indicate the target year for conversion to an electronic process of registration | Achieved |

Source: KUIDFC. All information is as on May 2013

**Table 7.20 - Encouraging Public Private Partnership**

| REFORM | STATUS |
|---|---|
| a) Regulatory/policy changes for facilitating PPP | Achieved |
| b) Listing of PPP projects. | Achieved |

Source: KUIDFC. All information is as on May 2013

## Optional ULB Level Reforms

A significant portion of the ULB-level optional reforms have been completed in the JnNURM mission cities. The primary reforms that are pending to be implemented are administrative in nature. As Table 7.21 tells us, administrative reforms have been implemented at various levels at the ULBs. While being an optional reform, it has direct consequences on the employees of ULBs and is implemented at various stages and levels. Some administrative reforms that have been suggested by the Government of India have however not been implemented fully. These primarily consist of rationalisation of the ULB staff and expenditures. Though it is usual for every Municipal Commissioners to have a term two to three years, the ULBs do not offer the guarantee of the same which is required by the reforms.

Of particular interest is the progress the State Government has been able to claim on structural reforms. Both Bengaluru and Mysore have been able to achieve the three major structural reforms: decentralization, co-ordination and accountability, and creation of technical municipal cadre. The official machinery does appear to be convinced of the need for this optional reform. As can be seen in Table 7.22 the non-JnNURM cities are not too far behind the Mission cities in achieving these norms.

Another area where the other cities are not lagging too far behind the JnNURM cities in implementing reforms is in the revision of building byelaws to make rainwater harvesting mandatory in all buildings. Bengaluru and Mysore have met the JnNURM norms. As can be seen in Table 7.23 Mangalore too is already fully compliant with the JnNURM standards and Hubli-Dharwad has completed 5 out of the 6 reforms.

There are however other areas where the performance of the JnNURM cities and the other cities is quite different, such as the revision of building byelaws to streamline the approval process. Bengaluru and Mysore have achieved this reform in line with JnNURM requirements. The picture

**Table 7.21 - Administrative reforms**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) Staff | | | | | |
| 1) Rationalisation of staff and human resource management | Achieved | Achieved | Ongoing | Yes | No |
| 2) Staff training | Achieved | Achieved | No | Yes | Yes |
| 3) Reduction in establishment expenditure | Achieved | Achieved | No | Ongoing | No |
| 4) Continue on tenure on decision makers, management – Minimum average tenure of Municipal Commissioner | Not Committed | Achieved | No | No | No |
| 5) Management review systems | Continuous process | Continuous process | Yes | Yes | No |
| b) Identified milestones with respect to rationalisation / redeployment in number of staff against the mission year | Ongoing | Ongoing | NA | NA | NA |
| c) State by when the ULB shall evolve a detailed training plan for its staff. At what frequency such plan shall be reviewed | Achieved | Achieved | NA | Already Existing | NA |
| d) Identified milestones for reduction in establishment expenditure against the mission year | Ongoing | Ongoing | NA – No Mission | NA – No Mission | NA – No Mission |
| e) Ensuring stability of tenure (minimum two years) for Municipal Commissioner/ executive officer and other municipal functionaries/ staff (commitment to be given by state) | Not Committed | Not Committed | NA | NA | NA |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

**Table 7.22 - Structural reforms**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGA-LORE | HUBLI - DHARWAD | GULBARGA |
| a) Decentralization of functions | Achieved | Achieved | Yes | Yes | Yes |
| b) Co-ordination & Accountability against city level agencies | Achieved | Achieved | NA | NA | Yes |
| c) Creation of cadre of Municipal staff for different technical disciplines | Achieved | Achieved | Yes | Yes | No |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.
NA: Not available

**Table 7.23 - Revision of building byelaws to make rainwater harvesting mandatory in all buildings**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) Final design of rainwater harvesting system and decision on end use | Achieved | Achieved | Yes | Yes | Yes |
| b) Preparation of draft building byelaws to reflect the mandatory clauses of rainwater harvesting | Achieved | Achieved | Yes | Yes | Yes |
| c) Amendment of the existing legislation to introduce the new building byelaws and Notification | Achieved | Achieved | Yes | Yes | Yes |
| d) Dissemination of the new set of building byelaws. through a website | Achieved | Achieved | Yes | Yes | No |
| e) City level workshops to address to the queries of general public | Achieved | Achieved | Yes | No | No |
| f) Start of approval as per the new building byelaws | Achieved | Achieved | Yes | Yes | Yes |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

in the other cities is however mixed. As can be seen in Table 7.24, while Mangalore and Gulbarga managed to update their building byelaws in 2010-11, Hubli-

**Table 7.24 - Revision of building byelaws to streamline the approval process**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) Consultation with stakeholders on modification required to building byelaws | Achieved | Achieved | Yes | No | No |
| b) Modification in the existing building byelaws for streamlining | Achieved | Achieved | Updated – 2011 | Updated – 2004 | Updated – 2010 |
| c) Defining mitigation measures for risk from natural disasters | Achieved | Achieved | Yes | Yes | Yes |
| d) Amendment of the existing legislation to introduce new byelaws | Achieved | Achieved | No (Final Approval Pending) | No | No |
| e) Dissemination of information on new laws on website | Achieved | Achieved | Yes | Yes | No |
| f) City level workshops with general public | Achieved | Achieved | Yes | Yes | No |
| g) MIS with links to relevant office | Achieved | Achieved | No | Yes | No |
| h) Approvals as per new byelaws | Achieved | Achieved | Yes | NA (No new bylaws) | Yes |
| i) Interactive citizen enquiry system | Achieved | Achieved | No | Yes | No |
| j) Reduction of average time for approvals to 10 days | Achieved | Achieved | No – 30 days | Yes – 7 days | No – 30 days |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

Dharwad had last updated their byelaws only in 2004. The sharpest contrast is in the case of creating byelaws on the use of recycled water. As Table 7.25 tells us, even as Bengaluru and Mysore have met the JnNURM norms, this is the only reform where there is no compliance at all at present in the non-JnNURM cities.

## Transport Reforms

### State Level Transport Reforms

Apart from the reforms that had been suggested by the Central Government, Karnataka chose to also implement several transportation related reforms in conjunction with its projects. Karnataka managed to complete all the reforms that were put forth at the State level.

**Table 7.25 - Byelaws on reuse of recycled water**

| REFORM | STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| a) Decision on end use of waste water | Achieved | Achieved –All ULBs common | No | No | No |
| b) Byelaws to mandate waste water usage | Achieved | Achieved | No | No | No |
| c) Building byelaws to introduce for use of recycled waste water | Achieved | Achieved | No | No | No |
| d) Dissemination of new building byelaws through website | Achieved | Achieved | NA | NA | NA |
| e) City level workshops | Achieved | Achieved | NA | NA | NA |
| f) Approval as per new byelaws | Achieved | Achieved | NA | NA | NA |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

**Table 7.26 - State level transport reforms**

| REFORM | STATUS |
|---|---|
| 1. Setting up of a City Level Unified Metropolitan Transport Authority for all one million plus cities, duly backed by a legislation, to facilitate coordinated planning and implementation of projects relating to urban transport and their integrated management | Achieved |
| 2. Nominating a single department at the State level to deal with all urban transport issues as against different departments at present | Achieved |
| 3. Change in byelaws and master plan of cities to integrate land use and transport by densification along with the MRTS corridors and areas around the stations | Achieved |
| 4. Setting up of a regulatory / institutional mechanism to periodically revise fares for all public and intermediate public transport systems | Achieved |
| 5. The State Government and ULB should waive off / reimburse its taxes on urban buses and city bus service/BRTS | Achieved |
| 6. Setting up of Dedicated Urban Transport Fund at the State level | Achieved |

Source: KUIDFC. All information is as on May 2013

## ULB Level Transport Reforms

At the ULB-level, Bengaluru has managed to implement all the planned reforms. Some transport reforms have not been completed in Mysore. These include the setting up of a centralised traffic management and planning mechanism – and the implementation of an intra-city bus system. The non-JnNURM cities have not achieved any of these reforms.

**Table 7.27 - ULB level transport reforms**

| REFORM | CURRENT STATUS | | | | |
|---|---|---|---|---|---|
| | BENGALURU | MYSORE | MANGALORE | HUBLI - DHARWAD | GULBARGA |
| Setting up of Dedicated Urban Transport Fund at the city level | Achieved | Achieved | NA (KSRTC) | NA (KSRTC) | NA (KSRTC) |
| Multimodal integration, including suburban railways (by involving MoR) to provide network connectivity in the region and single ticketing to provide seamless travel. | Achieved | Achieved | NA | NA | NA |
| Setting up of a Traffic Information Management Control Centre for effective monitoring and enforcement of traffic as well as data generation and data collection for future planning. | Achieved | Ongoing | NA | NA | NA |
| A well organized and efficient city bus system by using ITS through city specific SPV for bus services preferably on PPP under well structured contracts where the umbrella institution of the Government professionally does the role of planning, co-ordination, contracting, monitoring, supervision as well as management of common infrastructure and services. | Achieved | SPV Formation ongoing | NA | NA | NA |
| Parking policy where in parking fee represents the true value of land occupied, which is used to make public transport more attractive; banning of parking on arterial / ring roads, multi level parking centers in city central with park and ride facility | Achieved | Achieved | NA | NA | NA |
| An advertisement policy which taps advertisement revenue on public transport, intermediate public transport and public utilities for public purposes subject to relevant legislations | Bengaluru: Achieved | Mysore: Achieved | NA | NA | NA |

Source: KUIDFC, Bruhat Bengaluru Mahanagara Palike (BBMP), Mysore City Corporation (MCC - Mysore), Hubli-Dharwad Municipal Corporation (HDMC), Mangalore City Corporation (MCC – Mangalore), Gulbarga City Corporation. All information is as on May 2013.

NA: Not available

8

# Conclusions and Recommendations

This exercise set out to evaluate not just the specific projects under JnNURM in Karnataka but also the larger strategy of this Mission to intervene in urban development. This led to a set of 72 specific Terms of Reference. A summary of the answers to each of the 72 questions in the TOR is provided in Annexure I. The wide range of issues in the TOR requires that the conclusions and recommendations go beyond the implementation of specific projects to the strategies for state intervention in urban development whether or not it is to take the form of the next stage of JnNURM.

When we place the strategy for intervening in urban development in the larger context of urbanization in Karnataka it is clear that we need to distinguish between at least three categories of cities in the state. First, there are the cities that are primarily engines of economic growth. They could range from large metropolises, like Bengaluru, that have multiple engines of growth, to cities that have the potential to develop one or more engines of growth. Second, there are cities and towns that serve the purpose of attracting individuals from nearby villages and providing them with the education and skills which enable them to seek greater fortunes in other cities. These cities and towns are primarily centres of skill development for rural individuals. And third, there are cities and towns that grow primarily because they provide refuge to those who are marginalized in the rural areas. **It is therefore recommended that a strategy for intervention in urban Karnataka must move beyond the simple JnNURM classification of Mission cities and small and medium towns, to a threefold classification of urban centres in the State.**

The types of intervention required by each category of city would be different.

While the engines of growth may require an emphasis on infrastructure that foreign capital is comfortable with, the skill development centres may require an extra focus on education, and the cities under population pressure would need a greater emphasis on basic infrastructure and poverty alleviation measures. Subject to the results that a detailed classification would throw up, there would appear to be a strong case to develop new engines of growth in the Dakshina Kannada-Udupi region and in the Dharwad-Belgaum-Bagalkot region. The specific steps that need to be taken would not be confined to the cities but would also help the rural population access jobs in the urban centres. There is an equally strong case to strengthen Mandya's role as a city that enables the rural population with the skills needed to migrate to larger urban centres. And there is a need to ease the pressures developing in cities like Gulbarga due to the distress around them. **It is therefore recommended that a separate toolkit is created for the City Development Plans that are to be made for each category of city or town.**

The nature of the City Development Plans also suggests that the name of the Mission may be somewhat misleading. The CDPs are not entirely consistent with the task of urban renewal highlighted in the name of the Mission. The renewal of the inner city has a very low priority in the CDPs of Bengaluru and Mysore. The CDPs do relatively better when dealing with heritage, especially in Mysore. But the place of heritage in the CDP for Bengaluru, as revised in 2009, is minimal and rather superficial. It is thus clear at the very first stage of the Mission that the focus is more on urban development rather than on urban renewal. While this shift from urban renewal to urban development is not entirely unwarranted in itself, there are costs in completely ignoring urban renewal and heritage. To cite one important factor, an emphasis on heritage helps build citizens' pride in a city, which in turn develops civic consciousness. At a time when the lack of civic consciousness on issues like garbage disposal is painfully apparent in Bengaluru it is important to strengthen the sense of pride in the city. **It is therefore recommended that a detailed list of heritage sites be developed in Bengaluru and each of them be marked with signage that not only identifies them as heritage sites but also provides a brief account of why they qualify to be treated as such. In Mysore the listing and the boards are in place, but the brief accounts of why they qualify to be considered heritage sites can be added to each of them.**

Even as a strategy for development the CDPs face other challenges; an important one being the mismatch between the administrative and economic areas of the city. As we have seen the BBMP area in Bengaluru leaves out the core area of its major engine of growth, the IT industry. In Mysore areas critical to its tourism economy, such as Srirangapatna, are outside the

administrative boundaries of the city. The response to this challenge has often been to expand the administrative boundaries of the city through the creation of larger entities, such as the Bengaluru Metropolitan Area. But such an expansion covers a more diverse area, including both urban and rural spaces. Planning for such a larger area could result in loss of focus on the economic dynamics of the city, even as it makes the administrative tasks more difficult. It may be more prudent then to create smaller administrative areas that are best suited to meeting the administrative needs of the population. The economic plan could however cover a wider area consisting of several contiguous administrative areas which share the same economic dynamic. **It is therefore recommended that the administrative units of the cities be reduced to viable administrative sizes, while economic plans are made for several administrative units put together.**

From the stage of making City Development Plans to the formulation of projects, consultants play an important role. Their expertise is used to address a wide range of issues ranging from the technicalities of city plans to the costing of projects. Even as their inputs are considered useful there are questions about their overall efficacy. There is often an understated feeling in official circles that consultants tend to emphasize global practices and ignore local history. And when they do try to respond to the experience that already exists in government, they may sometimes be able to do little more than reformulate what is already known in official circles. In either case officials in government have little reason to stand up and defend strategies and projects worked out by consultants. Without the active support of officials there can be delays in the implementation of the projects. It is then important that the overall City Development Plan and the formulation of the projects that result from it are conceived and developed within the government. While consultants can be used to provide very specific technical inputs, the framing, and formal as well as informal responsibility, for plans and projects must lie within the government. This can be done by a department that has a comprehensive view of the entire process, and not just the spatial dimension. And the capacity to take these initiatives can be developed within the government both by training and learning-by-doing alongside consultants. **It is therefore recommended that the government officials play a larger intellectual role in the formulation of City Development Plans as well the formulation of projects that arise from those plans.**

Satellite towns have found a prominent place in the City Development Plan for Bengaluru. Historically Bengaluru's satellite towns have had a mixed history. When these towns have been built around manufacturing centres, as in the case of the public sector townships, they have been very successful. But when the economic basis is left out of

the towns and they are seen primarily as residential areas, they have tended to be less successful. Indeed, the residential townships only begin to grow rapidly when they expand towards a manufacturing area. Satellite towns would then work best if we return to the practice of building them around manufacturing or other economic activities. This could be done through joint ventures between a group of manufacturing or services firms and real estate developers. If these satellite towns are located in areas where labour is leaving agriculture on a large scale, it would be an incentive for industries facing a shortage of labour. This potential can be tapped if there is greater convergence between JnNURM and other economic policies, particulary policies for the information technology, biotechnolgy and manufacturing sectors. **It is therefore recommended that as a first step towards convergence the government through JnNURM or any other initiative create a viability gap fund that will be provided for satellite town projects that involve both industry and real estate developers.**

The choice of projects under JnNURM reflects an emphasis on those related to mobility. This prioritization may be the result of the way the Mission has worked in Karnataka. While in theory the projects, and the priorities they reflect, should have been derived from the City Development Plans, in reality the links with the CDP were very weak. As such the projects were taken from an existing set of priorities. Thus the priorities reflected in JnNURM need not reflect the overall priorities, with other projects being financed from other sources. But even if we ignore the prioritization across sectors there are areas within the dominant transportation sector that need greater attention. In order to provide greater mobility to labour within the city there is a need for low-cost mass transport facilities. These low cost facilities could also offer only minimal comforts so that they are not attractive to those who do not need them. **It is therefore recommended that the transport corporations introduce standing-room-only buses at a nominal charge within cities at the times when workers go to and return from work.**

We have already noted the potential growth in industrial labour that can be had from tapping those who are leaving agriculture. In order to enable this labour to be employed in urban centres low cost transportation would need to be provided to improve connectivity for the poor between the rural areas and urban centres. **It is therefore recommended that in districts where labour is leaving agriculture buses can be introduced at a nominal charge linking the rural areas with urban centres at times that would help workers go to and return from nearby working places.**

In the implementation of JnNURM projects delays are endemic. This is true both for UIG and BSUP projects in the mission cities as well as for UIDSSMT and IHSDP

projects in the small and medium towns. Some of these delays are unavoidable. For instance, the acquisition of land can only be undertaken after the project is sanctioned. But the acquisition of land is a process where delays are almost inevitable. But there are other delays that are avoidable. Greater coordination between agencies will reduce the delays due to projects waiting for specific clearances. There are also administrative delays. It would then help if a distinction was made between avoidable and unavoidable delays. The avoidable delays can be tracked by fixing the time that would be necessary for each task, in a way similar to what the Government has done under its Sakala programme. It would then be possible to fix accountability for those who have caused avoidable delays. **It is therefore recommended that the government fix a specific time that can be taken for each task in the implementation of the project that have potential for avoidable delays and put up these details on the relevant websites, along with the actual performance.**

A major weakness in the JnNURM targeting of the poor is the assumption that the poor and slum dwellers are identical. In reality there can be poor households who do not live in slums. They are necessarily left out of the net when providing basic services to the urban poor. **It is therefore recommended that Basic Services to the Urban Poor must include schemes that directly affect the poor wherever they live, and not be confined to slum dwellers alone.**

There is also an excessive reliance on housing alone as the main instrument of intervention on behalf of the poor. While no one can deny the importance of housing for the poor, there are also other areas of concern. There is reason to believe that Bengaluru has a major crisis in terms of providing health facilities to the poor. **It is recommended that a significant portion of resources set aside for the urban poor through JnNURM or other similar programmes be allocated to projects that make a substantial difference to the availability of health facilities for the urban poor.**

Another area of concern is the tendency for those who have been allotted houses under JnNURM to rent them out. This could either be because the non-poor have received allotments or because the poor find that they would be better off renting their JnNURM houses and living in areas where the rent is lower. If the latter is true there would be a case for investing in housing that the poor actually live in. This could be in housing built on the residential portions of old villages that have been absorbed in to the city. **It is therefore recommended that the government consider joint ventures with small landowners of villages that have been recently absorbed into the city to created effective housing for the poor.**

In the reforms that JnNURM seeks in return for its funds, there is reason to believe

that there is a significant gap between the implementation of a prescribed reform measure and the outcome that the reform measure was expected to result in. This is most striking in the case of Bengaluru where the implementation of reform measures with regard to the collection of property tax has still left nearly a quarter of house owners saying they do not pay property tax. **It is therefore recommended that when judging the efficacy of reforms the government must evaluate not just the implementation of the prescribed reform measures but also the outcomes that the measures were supposed to generate.**

In short, our recommendations are:

1. A strategy for intervention in urban Karnataka must move beyond the simple JnNURM classification of Mission cities and small and medium towns, to a threefold classification of urban centres in the state.
2. A separate toolkit must be created for the City Development Plans that are to be made for each category of city or town.
3. A detailed list of heritage sites must be developed in Bengaluru and each of them be marked with a board that not only identifies them as heritage sites but also provides a brief account of why they qualify to be treated as such. In Mysore brief accounts of why individual sites qualify to be considered of value to heritage can be added to the existing boards.
4. Administrative units of the cities must be reduced to viable administrative sizes, while economic plans must be made for several administrative units put together.
5. Government officials must play a larger intellectual role in the formulation of City Development Plans as well the formulation of projects that arise from those plans.
6. There must be greater convergence between JnNURM and economic policies, particularly policies for the information technology, biotechnology and manufacturing sectors. As a first step towards such a convergence, a viability gap fund must be created to provide for satellite town projects that involve both industry and real estate developers.
7. Standing-room-only buses at a nominal charge should be introduced within cities at the times when workers go to and return from work.
8. In districts where labour is leaving agriculture, buses must be introduced at a nominal charge linking the rural areas with urban centres at times that would help workers go to and return from nearby working places.
9. The Government must fix a specific amount of time that can be taken for each task in the implementation of the

project that have potential for avoidable delays. These details must be put up on the relevant websites, along with the actual performance.

10. Basic Services to the Urban Poor must include schemes that directly affect the poor wherever they live, and not be confined to slum dwellers alone.
11. A significant portion of resources set aside for the urban poor through JnNURM or other similar programmes be allocated to projects that make a substantial difference to the availability of health facilities for the urban poor.
12. The Government must consider joint ventures with small landowners of villages that have been recently absorbed into the city to created effective housing for the poor.
13. When judging the efficacy of reforms the Government must evaluate not just the implementation of the prescribed reform measures but also the outcomes that the measures were supposed to generate.

# Annexure I : Summary of the Findings of the Study for each of the Terms of Reference

1. **Are the major challenges of urbanization in Bengaluru and Mysore adequately reflected in the respective City Development Plans?**

The City Development Plans seek to identify the Strengths, Weaknesses, Opportunities and Threats facing individual cities. They are however characterised by some fairly serious limitations. The CDPs try to identify the urban challenges of individual cities independent of the larger process of urbanization. It thus underestimated the Bengaluru-centric nature of Karnataka's urbanization. It simply assumed that the pressure on Bengaluru would ease due to the development of Tier II cities. As a result it grossly underestimated the growth of Bengaluru and overestimated that of Mysore. It also assumed that independent townships could be developed without addressing the issue of the patterns of urbanization in Karnataka. As a result it ignored the fact that in recent decades Karnataka's urbanization has not been marked by the rapid growth of independent townships.

Another problem with the CDPs was that they planned for the administrative boundaries of the cities, though the built up areas of Bengaluru and Mysore are quite different from their administrative boundaries. The CDPs also assumed that the poor and slum dwellers are identical, while our survey clearly showed that this is not the case. It is also noted that though urban renewal finds a place in the name of the Mission itself, there is little place in practice for aspects like heritage, particularly in Bengaluru.

2. **What are the constraints faced by the Urban Local Bodies and Consultants in the preparation of the City Development Plans?**

The formation of the Bruhat Bengaluru Mahanagara Palike (BBMP) after JnNURM started resulted in two CDPs having to be prepared for Bengaluru, one in 2006 and a revised one in 2009. The challenges faced by the consultants were with respect to obtaining data for the projections. The population projections for both Bengaluru and Mysore were off the mark. And since these projections were the basis for

calculating other deficits, the numbers in the CDP turned out to be less than entirely accurate. Moreover, given that the mandate of the consultants was to provide capital investment plans for projects in these cities, the consultants felt that most of the issues raised in the stakeholder meetings were individual issues which were not very useful with respect to their mandate.

3. **What has been the role played by consultants in the making of City Development Plans?**

The mandate for the consultants from the ULBs was to project the population of the Bengaluru and Mysore, and provide capital investment plans for projects in these cities. The consultants held stakeholders meetings for a group of wards in the city that included citizen groups, NGOs, and elected representatives from these wards. The consultants also collected data through questionnaire surveys on sectors such as water supply and sewerage.

4. **What has been the progress in making operational a city-wide framework for planning and governance in Bengaluru and Mysore?**

The MPC and DPC are yet to become functional. As such there remain questions about the nature of the planning and governance framework, let alone it becoming operational. With Electronic City becoming a separate township additional questions arise.

5. **What is the sector-wise distribution of projects that are taken up from the City Development Plans of Bengaluru and Mysore?**

The original CDP mentions the kind of work that needs to be undertaken in various sectors but does not specifically name the projects; these have been left to the implementing agencies. The funds tend to be concentrated in a few sectors with mobility being a major thrust area. Moreover, even as the projects in the transport sector address the issue of mobility, there are some shortfalls in their reaching out to the poorer sections requiring urban transport.

6. **Are the chosen projects ones where alternative sources of financing are not available?**

Qualitative interviews with officials suggest that the implementing agencies generally have a shelf of projects which they try to carry out either through their own funds or through funds from various lending agencies like World Bank, Asian Development Bank etc. A few implementing agencies were also funded by the Government of Karnataka. Thus there is reason to believe implementing agencies have tried to use the JnNURM funding to

reduce the loan component of projects from these lending agencies.

7. **What is the record of implementation of selected projects? What is the average delay, if any, in their implementation?**

There has been delay in most of the projects. Since the exact date of start of project is difficult to determine, particularly when the project has been revised, average delay is not computable.

8. **What has been the progress in creating modern and transparent budgeting, accounting, and financial management systems for all urban service and governance functions in Bengaluru and Mysore?**

The Mission cities have moved into a double-entry accounting systems in 2005-06. However, since that was the first year of JnNURM it is not clear how much of this reform can be attributed to the Mission.

9. **Is there any noticeable deviation in the specific reforms that JnNURM has emphasized from those that have been brought about in the ULBs of Bengaluru and Mysore?**

The mandatory ULB-Level Reforms, a complete revamp of the Public Financial Management (PFM) cycle, appointment of consultants for development of state manual and Business Process Reengineering had not been completed in Mysore at the time of the study. Setting up a non-discretionary method for determination of property tax, the next revision of guidance values, and fixing the periodicity for revision of guidance values to be adopted, had not been completed in Mysore at the time of the study. Bengaluru had not committed to do a survey on the impact of subsidies and present this analysis. Mysore had not formulated a plan to reduce Non-Revenue Water (NRW) and Unaccounted for Water (UfW) and also not committed to do a survey on the impact of subsidies and presenting this analysis. The ULBs had not managed to completely recover the costs incurred by them in provision of services. Both Bengaluru and Mysore had not completed ranking and prioritization of clusters of urban poor settlements.

10. **What is the role of constraints other than funding in the implementation of UIG projects?**

There are a number of constraints other than funding. For BBMP, the non-availability of work front and problems in land acquisition seem to be two important constraints.

**11. What is degree of e-Governance in the implementation of individual projects, as well as in the functioning of the ULBs in the UIG cities of Bengaluru and Mysore?**

Implementing agencies apprise KUIDFC about monthly progress through meetings and telephone communications. Implementing agencies also send soft and hard copies of quarterly progress reports to KUIDFC. KUIDFC then circulates the status of projects to the concerned departments as well as uploads the soft copy of the status report on its website.

**12. What has been the extent of savings in costs that have resulted from e-Governance initiatives in Bengaluru and Mysore?**

Since all the e-Governance projects have not been implemented it would be misleading to calculate the savings in costs. However, the focus in terms of e-Governance initiatives appeared to be more on the creation of new facilities rather than reducing costs of earlier practices.

**13. What are the improvements in terms of transparency and promptness that have resulted from e-Governance initiatives in ULBs in Bengaluru and Mysore?**

Qualitative interviews indicate an improvement in the degree of transparency and promptness. However, it must be noted that the effect on the overall outcome can be varied. Though e-Governance was implemented in the case of property tax collection in Bengaluru, our survey indicated the overall outcome in terms of collections was still far from satisfactory.

**14. What has been the progress in the levy of property tax and collection in Bengaluru and Mysore?**

The collection of property tax varies quite substantially between Bengaluru and Mysore. Nearly a fourth of the owners in Bengaluru said they do not pay property tax. This proportion is significantly lower in Mysore.

**15. What has been the progress in the levy of user charges in Bengaluru and Mysore?**

User charges with respect to solid waste management and water supply charges have to be collected. The processes required for collection of user charges have been implemented. However, the efficiency of collection has to be improved. In Bengaluru, SWM charges have been added to the property tax collection thus there is better collection compared to that in Mysore. Though water meters have been installed, collection of water charges has not been efficient.

**16. What has been the share of UIDSSMT in the JnNURM funding in the state? How does it compare per capita with the share of the Mission cities?**

At 12 per cent the share of UIDSSMT seems small compared to the UIG share of almost 67 per cent. Among UIDSSMT allocations, the district of Yadgir has the highest per capita allocation of ₹ 3625 compared to per capita allocation for the mission cities. The per capita allocation was ₹ 3311 for Bengaluru and ₹ 7219 for Mysore.

**17. How effective are the criteria, implicit or explicit, that are used to select the small and medium towns that receive JnNURM funding?**

Ten eligible districts did not obtain funding from the UIDSSMT component clearly indicating that the criteria was not effective from a distributional point of view. This pattern must also be seen in the context of the process of urbanization. A district like Udupi which has the potential to be developed as an engine of growth has received no UIDSSMT projects, even as it has not been classified as a Mission city.

**18. Do the individual projects selected under the UIDSSMT address the primary constraints of urban development in their towns?**

Water supply, sewerage, storm water drains, roads and drains, and roads are the projects that have been undertaken in UIDSSMT. The City Level Investment Plan for nine towns informs us that projects that were undertaken in those towns were in the plan but were not priority. City Level Investment Plans for another nine towns tells us that projects undertaken in those towns were priority projects. Thus some UIDSSMT projects did address the primary constraints of urban development in their towns.

**19. Does the choice of projects sought by the Urban Local Bodies differ between the UIDSSMT towns and the UIG cities?**

At 61 per cent, water supply projects were the focus for UIDSSMT projects. The focus in Bengaluru was equally on mobility, sewerage, and storm water drain projects. The projects in Mysore were focussed on mobility and water.

**20. Is there a noticeable difference in the processes of financing UIDSSMT towns when compared to the UIG cities?**

The first instalment of 25 per cent of the Additional Central Assistance (ACA) for a project is released upon approval

of a project DPR by the CSMC. Prior to approval, the Technical Appraisal Agency of MoUD (CPHEEO, etc.) appraises the DPR and recommends its approval to CSMC. CSMC might approve or not, might agree to fund the entire GoI Share (80 per cent or 35 per cent based on city) or cap the DPR cost. Signing of a Memorandum of Agreement (MoA) by the State Government, ULB or parastatal agency might happen anytime after the first DPR is approved. Irrespective of the number of projects, each ULB or parastatal agency signs only one MOA.

The first instalment is a sum of 25 per cent of ACA and 25 per cent of the State Government share. The first instalment of the ACA is released by the Centre to the Finance department of GoK as soon as the project is approved. GoK then issues a GO and the combined first instalment is released to the SLNA. As soon as the ULB or the parastatal agency spends 70 per cent of the funds released in the first instalment it can submit a Utilization Certificate to the SLNA which will then forward it to the State and Central Government. Upon approval, the next instalment is released by MoUD to GoK, which in turn releases the funds to SLNA. SLNA may or may not immediately release the same to ULB based on progress of the project and other compliance issues. Each instalment is released subject to compliance with all project objectives and submission of UC.

This process is followed for all the sub-components of the JnNURM. There is thus no noticeable difference between the Mission cities and the UIDSSMT towns.

**21. Is there a noticeable difference in the delay in projects in UIDSSMT towns when compared to the UIG cities?**

There has been delay in most of the projects both in the Mission cities as well as in the UIDSSMT towns. Since the exact date of start of project is difficult to determine, particularly when projects are approved in stages, average delay is not computable.

**22. Has the progress in creating modern and transparent budgeting, accounting, and financial management systems for all urban service and governance functions in small and medium towns been significantly different from that in the UIG cities?**

A survey of the accounting practices of Mangalore, Hubli-Dharwad and Gulbarga municipal corporations found that the practices were uniform throughout the State for the most part.

**23. Has the progress in using e-Governance in the**

**implementation of individual projects, as well as in the functioning of the ULBs in small and medium towns been different from that of UIG cities?**

Visits to the Mangalore, Hubli-Dharwad and Gulbarga municipal corporations made it clear that there were significant differences in the degree of prevalence and practices adopted with regard to e-Governance from that of UIG cities.

24. **What has been the extent of savings in costs that have resulted from e-Governance initiatives in small and medium towns in Karnataka? Has this been significantly different from that in UIG cities?**

Visits to the Mangalore, Hubli-Dharwad and Gulbarga municipal corporations made it clear that there were significant differences in the degree of prevalence and practices adopted with regard to e-Governance from that of UIG cities. As in the case of the Mission cities, since all the projects have not been implemented it would be misleading to calculate the savings in costs. However, the focus in terms of e-Governance initiatives appeared to be more on the creation of new facilities rather than reducing costs of earlier practices.

25. **What are the improvements in terms of transparency and promptness that have resulted from e-Governance initiatives in ULBs in small and medium towns in Karnataka? Has this pattern been significantly different from that in the UIG cities?**

Qualitative interviews indicate an improvement in the degree of transparency and promptness. Here again, as in the case of the UIG cities, it must be noted that the effect on the overall outcomes can be varied.

26. **Has the progress in the levy of user charges in the small and medium towns been different from that of the UIG cities?**

Both the Mission cities and the UIDSSMT towns are still some distance away from meeting JnNURM targets on this score.

27. **Has the progress in the levy of property taxes and their collection in the small and medium towns been different from that of the UIG cities?**

Our survey indicates that the willingness to pay property taxes is greater in the UIDSSMT towns than in the UIG cities. The proportion of house owners who said they did not pay any property tax was much lower in the smaller towns .

**28. What are the challenges of land acquisition for projects in small and medium towns? Are they different from those in the Mission cities?**

With respect to projects in Mission cities, land acquisition has been an important reason for delay of numerous UIG as well as BSUP projects. With respect to UIDSSMT projects only two places (Nanjungud and Shikaripura) reported land acquisition problems. Moreover, no land acquisition problems were reported with respect to IHSDP projects. Thus while there were challenges for land acquisition for projects in few small and medium towns, they were not of the scale of the Mission cities.

**29. What has been the share of JnNURM funding for the BSUP component?**

The share of JnNURM funding for the BSUP component for Karnataka has been 14.84 per cent.

**30. What has been the progress in the internal earmarking of funds for services to the urban poor?**

Internal earmarking of funds for urban poor is done in the UIG cities but is not done in other cities.

**31. What has been the progress achieved in terms of security of tenure for the urban poor in Bengaluru and Mysore?**

As the bulk of the poor in Bengaluru and Mysore do not live in slums they are not covered by JnNURM efforts to improve the security of tenure. Moreover, as per KUIDFC officials, government does not give the title of the land or ownership of the house to the urban poor, but only an occupation certificate. It must also be noted that a significant proportion of the residents in BSUP houses surveyed said they were tenants.

**32. What has been the progress of specific projects for urban housing for the poor under JnNURM in Bengaluru and Mysore?**

Due to a number of reasons mentioned in the report, progress has been far from satisfactory. However as the poor do not live in slums alone a broader strategy for housing them is required.

**33. What has been the scale of housing projects for the urban poor in the context of the need for housing in Bengaluru and Mysore?**

The total number of dwelling units approved in Bengaluru was 19984 units; this is in contrast to the stated number of 217257 slum households in the original CDP and 136486 slum households in the revised CDP. With respect to Mysore, the number of dwelling units approved was 8134 units

as against the 18404 slum households living in notified slums, as mentioned in the CDP.

**34. What has been the progress of slum development under Rajiv AwasYojana?**

Under RAY, Central Assistance is extended to States that are willing to assign property rights to slum dwellers and undertake reservation of land for Economically Weaker Sections (EWS)/ Low Income Groups (LIG), earmark 25 per cent of municipal budget for basic services to the urban poor/slum-dwellers and bring in legislative amendments and policy changes to redress land and affordable housing shortages for the urban poor. Fifty per cent of the cost of provision of basic civic and social infrastructure and amenities and of housing, including rental housing and transit housing for in-situ redevelopment in slums is borne by the Centre.

Under the preparatory phase, an amount of ₹ 810.40 lakh has been approved for preparation of Slum Free City Plan of Action (SFCPoA) in 10 cities in Karnataka. Of the 10 cities, Hubli-Dharwad, Mangalore, Belgaum, Gulbarga, Davanagere, Bellary, Shimoga, Tumkur have finalised/ completed their action plans. Only Bengaluru and Mysore were yet to finalize their action plans at the time of the study.

**35. Is there a change in the household size and the number of households when slums are shifted?**

Qualitative interviews of beneficiaries of JnNURM houses do not suggest this is a major concern in the Mission cities.

**36. What has been the progress of water supply projects for the urban poor under JnNURM in Bengaluru and Mysore?**

In BSUP the necessary infrastructure, which includes water supply, is provided only after the dwelling units are built. In Bengaluru only two projects have been completed with the rest being under various stages. Similarly, in Mysore, none of the BSUP projects completed were completed at the time of the survey.

**37. What has been the scale of water supply projects for the urban poor in the context of the overall water shortage in Bengaluru and Mysore?**

In Bengaluru, providing water supply to BSUP houses is supposed to cost approx ₹ 16.07 crores out of the total infrastructure cost ₹ 113.84 crores. In Mysore, providing water supply to BSUP houses is supposed to cost approx ₹ 4.32 crores out of the total infrastructure cost ₹ 70.12 crores. It must be also noted that JnNURM

focuses only on slums while the problem for the poor living elsewhere is equally, or more, severe.

**38. What has been the progress of specific projects for sanitation for the poor under JnNURM in Bengaluru and Mysore?**

In BSUP the necessary infrastructure, which includes sanitation, is provided only after the dwelling units are built. In Bengaluru only two projects have been completed with the rest being under various stages. Similarly, in Mysore, none of the BSUP projects were completed at the time of the study.

**39. What has been the scale of sanitation projects for the urban poor in the context of the need for sanitation in Bengaluru and Mysore?**

In BSUP the necessary infrastructure, which includes sanitation, is provided only after the dwelling units are built. In Bengaluru, these facilities for sanitation cost ₹ 13.11 crores out of the total infrastructure cost ₹ 113.84 crores. For Mysore, these facilities for sanitation cost ₹ 5.1 crores out of the total infrastructure cost ₹ 70.12 crores. It must be also noted that JnNURM focuses only on slums while the problem for the poor living elsewhere is equally, or more, severe.

**40. What has been the progress of specific health projects for the poor under JnNURM in Bengaluru and Mysore?**

Projects that had existing health centres close by have not been provided health centres in the plan. In some projects community centres are also expected to function as health centres.

**41. What has been the scale of health projects for the urban poor in the context of the overall shortfalls in the access to health facilities in Bengaluru and Mysore?**

In Bengaluru, providing health centres/ community centres/social infrastructure to BSUP houses is supposed to cost approximately ₹ 14.34 crores out of the total infrastructure cost ₹ 113.84 crores. In Mysore, providing health centres/community centres/ social infrastructure to BSUP houses is supposed to cost approximately ₹ 1.99 crores out of the total infrastructure cost ₹ 70.12 crores. These allocations are not in line with the substantial shortfalls that our survey brought out.

**42. What has been the progress of specific projects for education for the poor under JnNURM in Bengaluru and Mysore?**

In BSUP the necessary infrastructure, which includes educational facilities,

is provided only after the dwelling units are built. Projects that had existing educational facilities close by have not been provided with new ones in the plan.

**43. What has been the scale of education projects for the urban poor in the context of the demand for education in Bengaluru and Mysore?**

In Bengaluru, providing school building to BSUP houses is projected to cost approximately ₹ 0.2 crores out of the total infrastructure cost of ₹ 113.84 crores. In Mysore, there is no provision for school building in the ongoing projects; however, there is a provision for a informal education centre at ₹ 0.19 crores.

**44. What has been the progress of specific projects for social security for the urban poor under JnNURM in Bengaluru and Mysore?**

The aim of BSUP is not only to build houses but also to provide necessary infrastructure facilities to the urban poor to improve their way of living. In BSUP livelihood centres and informal markets are provided only after the dwelling units are built. Projects that had existing livelihood centres or informal markets close by have not been provided with new ones in the plan.

**45. What has been the scale of projects for social security of the urban poor in the context of the need for social security in Bengaluru and Mysore?**

In Bengaluru, providing livelihood centres and informal markets to BSUP houses is projected to cost approximately ₹ 0.72 crores out of the total infrastructure cost of ₹ 113.84 crores. In Mysore, there is no provision for livelihood centres or informal markets to BSUP houses.

**46. What has been the share of JnNURM funding for the IHSDP component?**

The share of JnNURM funding for the IHSDP component for Karnataka has been 6.63 per cent.

**47. Has the progress achieved in terms of security of tenure for the urban poor in the IHSDP towns been noticeably different from that in the BSUP cities?**

Government does not give the title of the land or ownership of the house to the urban poor, but only an occupation certificate.

**48. Has the progress of specific projects for urban housing for the poor in the IHSDP towns been noticeably different from that in the BSUP cities?**

Though there have equal delays as in BSUP, out of 17237 dwelling units, 13198 units have been occupied in IHSDP towns. Thus, the progress of IHSDP projects has been noticeably different from that in the BSUP.

**49. Has the progress of slum development in the IHSDP towns been noticeably different from that in the BSUP cities?**

As per officials at KUIDFC, since IHSDP projects were offering individual houses they faced little or no resistance from urban poor. This however was not the case with BSUP as the DUs were in ground-plus format leading to resistance from urban poor. Thus the progress of IHSDP projects was different from that in BSUP.

**50. Does the size of the household and the number of households increase when slums are shifted? Is this pattern different from that in the mission cities?**

As per officials in KSDB the size of the household and the number of households remain the same. Thus the pattern in small towns is not very different from that of mission cities.

**51. Is there a variation in costs per dwelling unit between BSUP and IHSDP towns and also within IHSDP towns?**

Yes there is variation in costs per dwelling unit between BSUP and IHSDP towns. There is variation even within IHSDP towns.

**52. Does the extent of cost escalation vary between BSUP and IHSDP towns and also within IHSDP towns?**

Yes, the extent of cost escalation varies between BSUP and IHSDP towns and also within IHSDP towns.

**53. What is the proportion of in situ slum development to total slum development?**

All IHSDP projects have been in-situ. With respect to BSUP, in-situ development has been more prominent in Bengaluru compared to that in Mysore.

**54. Are the broad objectives set out in the preamble to the Seventy-fourth Constitution Amendment Act reflected in the functioning of ULBs?**

All reforms except one that were a part of the Seventy-fourth Constitution Amendment Act in JnNURM have been implemented. The one pending reform is regarding the formation of the District Planning Committee (DPC)/ Metropolitan Planning Committee (MPC).

**55. Have rent control laws been adequately reformed?**

All the reforms that were required as a part of the Rent Control Laws in JnNURM have been implemented in Karnataka. But it is not clear how much of this can be attributed to JnNURM as the process had begun before the Mission.

**56. What has been the progress on the rationalization of stamp duty for the transfer of property?**

All the reforms that were required as a part of the rationalisation of stamp duty in JnNURM have been implemented in Karnataka.

**57. What have been the steps taken to repeal ULCRA?**

All the reforms that were required as a part of the urban land ceiling in JnNURM have been implemented in Karnataka.

**58. What has been the progress with regard to community participation laws providing for Area Sabhas below the municipal ward?**

All the reforms with regard to providing community participation laws have been implemented in Karnataka. The actual functioning of these reforms is however often a matter of debate.

**59. What has been the progress in the enactment of public disclosure laws?**

All the reforms with regard to enactment of public disclosure laws have been implemented in Karnataka.

**60. What has been the progress in the integration of city planning and delivery functions?**

Since the reform on MPC/DPC has not been implemented, city plans have not been placed before MPC/DPC. All other activities with respect to integration of city planning and delivery functions have been completed.

**61. What has been the progress in urban transport reforms at the state level?**

All the reforms that were required as a part of the State Level Transport Reforms in JnNURM have been implemented in Karnataka.

**62. What has been the progress in urban transport reforms at the city level?**

All the reforms that were required as a part of the ULB Level Transport Reforms in JnNURM have been implemented in Bengaluru. Two Urban Transport Reforms are pending in Mysore.

**63. Have the specific reforms that have been suggested had the desired effects?**

In terms of having the desired effects the impact of the reforms have been

mixed. At the level of implementation itself, while a vast majority of the required measures have been implemented, the reforms have tended to falter at crucial points like the setting up of the MPC and the DPC. The effect of reforms like e-Governance too has to been seen in perspective. While it has modernised services, we cannot assume that the reforms have removed the more serious problems. For example, the computerization of property tax collection has been quite widespread in Bengaluru, but it has not dramatically reduced the number of those house owners who say they do not pay this tax.

**64. Is there any delay in the issue of Utilization Certificates?**

Implementing or parastatal agencies submits a utilization certificate to the nodal agency as soon as it spends 70 per cent of the funds released in the previous installment. No undue delay was reported either by KUIDFC officials or the implementing agencies. However the procedure itself could be time consuming. The time taken has been further enhanced in recent months. Till early 2013 installments were released once the utilization certificate was submitted; this process has been changed wherein the release of funds has been tied up with the physical progress of the project. Now the second, third, and fourth installments are released only when the utilization certificate is submitted and there is 30 per cent, 40 per cent, and 60 per cent physical progress, respectively.

**65. What are the specific innovations in the processes of implementation of projects introduced under the JnNURM? What has been the effect of these innovative processes?**

Arguably the most far reaching innovation is the tying up of the release of funds not only with the utilization certificate but also with the physical progress of the project. KUDIFC officials believe this process has made the implementing agency more accountable. However, given the delays this process often entails there is reason to consider other possible mechanisms of ensuring accountability.

**66. What are the specific innovations in the monitoring processes of implementation of projects introduced under the JnNURM? What has been the effect of these innovative monitoring processes?**

In the process of releasing the next instalment, the nodal agencies ask the independent review and monitoring agency (IRMA) or the third party inspection and monitoring agency (TPIMA) to review the amount of work done and submit a report so that the

subsequent installment of the Additional Central Assistance and the State Government share can be released.

There are three stages of IRMA/ TPIMA inspection: pre-construction, construction, and post-construction. The IRMA has to submit a pre-construction report, quarterly reports during the construction stage, a trial run and completion report. The nodal agencies then appraise the quarterly progress of the project/projects to the State as well as the Central government.

As a result of the monitoring process, KUIDFC officials felt that the quality of work has been of a better standard.

**67. What is the relative importance of the four major components in the JnNURM, i.e., Urban Infrastructure and Governance (UIG); Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT); Integrated Housing and Slum Development Programme (IHSDP); and Basic Services for Urban Poor (BSUP)?**

With respect to Karnataka, UIG projects have been given the maximum importance followed by BSUP projects, UIDSSMT projects, and IHSDP projects.

**68. What is the extent of effective decentralization in the entire JnNURM process?**

The main instrument of decentralization in the way the JnNURM has been conceptualized lies in the process of developing the City Development Plan. Citizens are expected to be consulted in the making of the CDP. And once their views are taken on board the CDP is expected to be the guiding force for the projects that are to be taken up. But as already noted, the citizens often took an individualistic view and did not contribute substantially to the development of the larger picture. And since the CDPs themselves were less than effective they were not the main guiding force in the choice of projects.

**69. Is there a difference between the type of projects sanctioned by the Central Government (for the Mission cities) and the State government (for the small and medium towns)?**

Yes. Water supply, sewerage, storm water drains, roads and drains, and roads are the projects that have been undertaken in UIDSSMT. The focus in Bengaluru was equally on mobility, sewerage, and storm water drain projects. The projects in Mysore were focused on mobility and water.

**70. What is the effect of changes in projects made at the insistence of the Government of India?**

As per officials at KUIDFC, the only suggestion was in the case of a water supply project in Mysore where the CSMC suggested that the proposed water scheme be converted to a 24/7 supply scheme. Though this suggestion seems beneficial, a consultant suggested that before a 24/7 supply could be started there was a need to meter all users. Thus the work of metering all users had to be tendered to another contractor as a result of which the project was delayed.

**71. What are the capacity deficits?**

As per officials at KUIDFC, lack of trained manpower and lack of interaction among government departments so that they can inform each other about their plans/projects are among the major capacity deficits.

**72. Does the project based system lead to greater distress in implementation (such as roads being dug up twice, first for water and later for sanitation)?**

Despite the problems faced, officials at the implementing agencies as well KUIDFC officials were in favour of a project based system.

# Annexure II : A Note on Methodology

This study has used a combination of methodological techniques: secondary data, primary data from individual agencies, primary survey data, and qualitative data. Secondary data from the Census of India and Registrar General of India has been used to understand the pattern of urbanization. Primary data from KSRTC and BMTC has been used to capture the bus transport system. A large sample survey was used to capture the existing conditions on the ground and the outcomes, where possible, of the policy initiatives. And qualitative interviews were carried out in five cities – Bengaluru, Mysore, Mangalore, Hubli-Dharwad and Gulbarga, to understand the process of implementation of reforms.

The calculations done using these methods require elaboration in three areas: the sample design; the calculation of the difference between the expected and actual population when tracing the patterns of urbanization; and the calculation of the Earnings per Kilometre (EPKM) and the Load Factor (LF) in bus transport.

## Sample design of the NIAS-JnNURM household Survey 2013

The survey was designed to capture the urban situation in Karnataka. The households were selected as part of a multi-stage stratified sequential random sample from cities of Karnataka. Taking into account geographical diversity of Karnataka, the first stage of stratification was to divide the state into four regions: Old Mysore, Coastal Karnataka, Bombay Karnataka, and Hyderabad Karnataka (including Bellary). Against this backdrop districts in Karnataka were first ranked according to their levels of urbanization in the 2011 Census of India. As can be seen in Table A1.1.1 four districts had levels of urbanization that were higher than that of the whole of Karnataka. These districts were natural selections for the survey. In each of these districts the largest city was then chosen to be surveyed. In those of these districts where the urban centres accounted for less than 50 per cent of the population and additional small town was also chosen. As Bengaluru and Hubli-Dharwad accounted for more than 50 per cent of the population of their districts, they were the only cities chosen in their respective districts. In the case of Dakshina Kannada and Mysore additional towns were chosen. In Dakshina Kannada the largest town was

Mangalore and Mulki was chosen as the additional town since it had an UIDSSMT project. In Mysore district, Mysore city was chosen as the largest urban centre and Nanjangud was chosen as the additional town as it had an UIDSSMTproject as well as an IHSDP project.This selection met two of our requirements for an evaluation of JnNURM. First, it included Bengaluru and Mysore, the only two cities selected from Karnataka for the UIG and BSUP components of JnNURM. And second the selection covered three of the four regions that we had divided Karnataka into.In order to choose a city from the fourth region – Hyderabad-Karnataka – two minimum criteria were fixed. The first was that the district should have at least 30 per cent urbanization and the second was that it should have at least 65 per cent literacy rate. Two cities– Gulbarga and Bellary –met these criteria. Given Bellary's relative proximity to Hubli-Dharwad that was already chosen, it was decided to pick Gulbarga. Since the urban centres in Gulbarga district accounted for less than 50 per cent of the population, an additional town had to be chosen. Shahbad was chosen as the additional town as it had an UIDSSMT project.

**Table A.1.1 – Selected districts of Karnataka with rates of urbanisation**

| State / District | % urban in 2011 |
|---|---|
| Bengaluru | 90.94 |
| Dharwad | 56.83 |
| Dakshina Kannada | 47.60 |
| Mysore | 41.35 |
| Gulbarga | 32.46 |
| **KARNATAKA** | **38.57** |

Source: Calculated from the Census of India - 2011, Government of India.

The total size of the survey was pre-fixed to be 4500 households. Given the overwhelming dominance of Bengaluru in the share of population of all five cities put together, it was felt that following a strict proportional distribution of this sample across the cities on the basis of population would result in some cities getting a sample size that was below a desirable critical minimum. It was decided that 2500 households would constitute a sufficient sample size for the study of Bengaluru City. Going by the size of the cities in other districts the remaining 2000

**Table A.1.1.2 – Distridution of sample across Cities and Towns**

| City /Town | Distrigt | Sample size |
|---|---|---|
| Bengaluru | Bengaluru | 2500 |
| Mysore | Mysore | 600 |
| Nanjangud | Mysore | 50 |
| Hubli-Dharwad | Dharwad | 650 |
| Mangalore | Dakshina Kannada | 300 |
| Mulki | Dakshina Kannada | 50 |
| Gulbarga | Gulbarga | 300 |
| Shahbad | Gulbarga | 50 |

households were divided so that the sample size was 650 households each for Mysore and Dharwad districts and 350 households each for Gulbarga and Dakshina Kannada districts. In districts where a small town was also chosen 50 households were allotted to the small town and the remaining given to the larger urban centre in that district. The sample size for each city or town was then as follows:

At the next stage each city was geographically stratified into zones along its ward boundaries. While Bengaluru was pre-divided into 8 zones by its municipal authorities, the remaining cities were divided into two zones based on their geography and population. The wards in a single zone are then ranked according to literacy.[1] The top ranked, the bottom ranked and the median wards are selected for the study.[2]

In the case of Bengaluru, there was a reorganisation of wards in 2009. As a result of this, the 2001 Census data for population and literacy could not be used for the study. The literacy data for newly-formed wards was also unavailable. However, the area and population of the newly-formed wards was available. Therefore, the proxy that was chosen in the case of Bengaluru was that of population density. The top ranked, the bottom ranked and the median wards in terms of population density were selected for the study. The sample from slums was chosen in a manner that the proportion of such households in the sample was consistent with that of the proportion of households in recognised and unrecognised slums to the population of the city. In addition, 100 households were allotted from the Bengaluru sample for the city's slum population that had been beneficiaries of the JnNURM project for the urban poor – the BSUP. (In Mysore, 50 households were allotted for the same purpose.) The sample was also designed to include areas that were originally village centres so as to factor in the rural population of Bengaluru. The village centres were determined on the basis of building layouts like temples, water-bodies etc.

The households selected as the Ultimate Stage Units (USU) are based on population clusters as seen in geographic images. After the selection of the wards, the final number of households to be surveyed had been allocated according to the size of the population in those wards. Streets were then selected randomly in all population clusters of the selected wards. This ensures that all types of clusters are surveyed within wards with different characteristics.

The survey used the recall-based interview method using a questionnaire for data collection. The data collection and

[1] Literacy, here, is used as a proxy for gauging the relative condition of the households. An assumption here is that areas with more literate populations will also have more economically well-off populations. The 2001 Census provides population and literacy data at the ward level. The 2011 Census had not released ward-level data as of January 2013 when the survey was designed.

[2] Agaram was a selected Ward (with low population density) in Bengaluru however it was excluded since it largely consisted of military areas without civilian populations

field-work started on 18th February, 2013. It was conducted in the five cities and three towns being surveyed in a parallel manner and was completed on 17th April, 2013.

## Calculation of Difference Between Expected and Actual Population

All-India Rural-Urban Population data was collected at the district level from the Census data for the years 1991, 2001 and 2011. A break-up of the total population into rural and urban populations is provided in the Population Census (A) Series also known as PCA. The Crude Birth Rate (CBR) and the Crude Death Rate (CDR) of all states are recorded and published as a part of the Sample Registration System (SRS) which is brought out by Registrar General of India (RGI) Office. The CBR and the CDR were collected for the decade of 2001-2011.

With the variable P denoting Population,

P (Year) = P (BaseYear) + {[CBR – CDR] x P (Base Year)) + Migration

Now, CBR – CDR = Rate of Natural Increase (RNI)

The Population from each Census year has been taken as a base and the population has been projected using theCBR and CDR that have been provided at the State Level by the SRS data.

We can rewrite the above as -
Population (Year) = Population (Base Year) [1 + RNI] + Migration
**ie, M = P (Y) – {P (BY) [1 + RNI]}**
where M denotes the Net Migration.

After factoring in various unaccounted parameters such as intra-state variations, changes in borders or unrecorded changes in the CBR and CDR, the value of M will be equivalent to the net difference between the expected and the actual population.

Therefore, within a study of district level populations - M denotes the net difference between the expected population and the actual population at the time of Census.

### Definitions

**Urban –** For the Census of India 2011, the definition of urban area is as follows;

1. All places with a municipality, corporation, cantonment board or notified town area committee, etc.
2. All other places which satisfied the following criteria:
   i) A minimum population of 5,000;
   ii) At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and

iii) A density of population of at least 400 persons per sq. km.

The first category of urban units is known as Statutory Towns. These towns are notified under law by the concerned State/ UT Government and have local bodies like municipal corporations, municipalities, municipal committees, etc., irrespective of their demographic characteristics as reckoned on 31st December, 2009.

The second category of Towns (as in item two above) is known as Census Town. These were identified on the basis of Census 2001 data.

**Urban Agglomeration (UA) -** An urban agglomeration is a continuous urban spread constituting a town and its adjoining outgrowths (OGs), or two or more physically contiguous towns together with or without outgrowths of such towns. An urban agglomeration must consist of at least a statutory town and its total population (i.e. all the constituents put together) should not be less than 20,000 as per the 2001 Census. In varying local conditions, there were similar other combinations which have been treated as urban agglomerations satisfying the basic condition of contiguity.Examples: Greater Mumbai UA, Delhi UA, etc.

**Crude Birth Rate (CBR)** – (Number of Live Births during the year / Mid-Year population) x 1000

**Crude Death Rate (CDR)** – (Number of Deaths during the year / Mid-year population) x 1000

## TRANSPORT

**List of formulae used for Bengaluru data:**

The methodology to calculate Earnings per kilometre (EPKM) and Load Factor (LF) have been taken from BM Satisha's study.[3]He had calculated the two performance indicators for 344 ordinary bus routes in Bengaluru. The formula used by him for the Earnings per Kilometre was:

$$EPKM = \frac{Traffic\ receipts}{Effective\ km}$$

where,

**Traffic receipts** constitute the revenue realized from transportation of passengers and incidental revenue related to transportation of passengers.

**Effective kilometres** is the total revenue earning kilometres wherein revenue received through sale tickets to passengers. Effective kilometres constitute operation of kilometres through 'scheduled trips' and 'extra trips'. EPKM is expressed in paise. The formula used for the Load Factor was:

[3] Satisha, B.M., "Functional Review of Bengaluru Metropolitan Transport Corporation: An operator point of view", M.Tech thesis, Cistup, Indian Institute of Science, Bengaluru, 2012, pp 16-21.

$$LF = \frac{Passenger\ km}{Seat\ km}$$

Where,

$$Passenger\ km = \frac{Traffic\ revenue}{Fare\ per\ km}$$

And

$$Seat\ km = Average\ seating\ capacity \times Effective\ km$$

The formulae used by us to calculate **passengers per day** and **revenue per day** are:

$$\text{Passengers per day} = \frac{LF}{100} \times \text{Number of trips in a day} \times \text{Average seating capacity}$$

Since load factor is expressed as a percentage, it is divided by 100. The average seating capacity was taken as **46** for all the routes.

Where, route length is the distance between the starting and ending points for each route.

**List of formulae used for Mysore data:**

The formulae used for the performance indicators by the KSRTC Division at Mysore are:

$$EPKM = \frac{Traffic\ revenue}{Effective\ km} \times 100$$

EPKM is multiplied by 100 to convert it into paise.

$$LF = \frac{Actual\ EPKM}{Expected\ EPKM} \times 100$$

# Annexure III : Responses to Challenges in Solid Waste Management

Waste is generated by activities in all economic sectors and is generally regarded as an unavoidable by-product of economic activity. These activities include inefficient production processes, low durability of goods and unsustainable consumption patterns. The generation of waste reflects a loss of materials and energy. It imposes economic and environmental costs on society for its collection, treatment and disposal. It has also formed an increasing part of the total material flow through the economy.

Waste may be defined as any substance (not the primary element), scrap material or article that is not believed to have any further use. Generally waste could be in solid, liquid, or gaseous form. Waste generated constitutes a blend of its forms. The different categories of waste generated based on their source have been identified as: household waste, waste from hospitals and healthcare establishments, horticultural waste, construction and demolition waste, waste from street sweeping, drain silt and waste, commercial waste, market waste, institutional waste, slaughter house waste and dead animals, sludge from sewage treatment plants, process waste, industrial waste and E-waste. As cities across the world have grappled with the challenge of waste they have come up with responses that other cities could learn from.

Integrated Solid Waste Management (ISWM) is based on the concept that all aspects of a waste management system (technical and non-technical) should be analysed together, since they are in fact interrelated and developments in one area frequently affect practices or activities in another area.

ISWM is based on the principles of 3Rs, i.e., Reduce, Reuse, Recycle and frequently including the fourth R – Recovery. This hierarchy of waste management is applicable both at source of waste generation and involves the entire life-cycle process from generation to disposal, of varied waste streams. Implementing the 3R approach will need to closely review diversities in terms of waste characteristics, involved stakeholders and the required technological know-how.

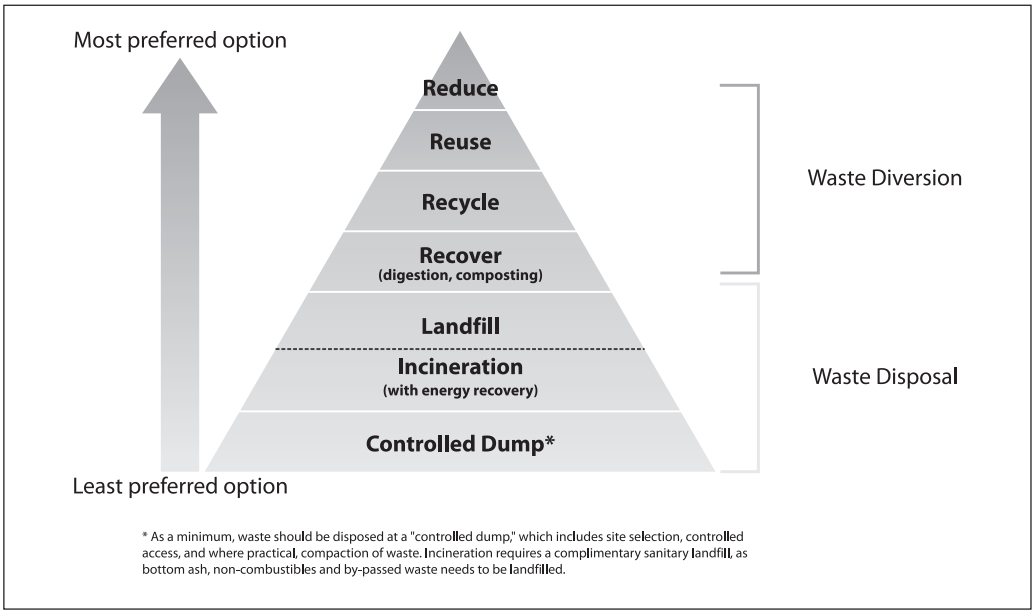
As can be seen from Chart A 3.1, the 3R approach places waste reduction at its point of generation as the foremost objective. This can be achieved by redesigning products or changing patterns of production and consumption. A reduction in waste generation has a two-

fold benefit in terms of greenhouse gas emission reductions. First, the emissions associated with material and product manufacture are avoided. The second benefit is eliminating the emissions associated with the avoided waste management activities.

Reuse will mean not discarding materials as it might be reused toward a different purpose than originally intended. This leads to re-using the material and reducing consumption of new resources. This will include using jars to store liquid or leftover food, trading or selling used DVDs, using an old shirt as a car rag or even re-using cutlery. Like reducing, it avoids creating waste rather than trying to recycle it once it already exists.

Recycle technically is a form of reusing, but it refers more specifically to items that are discarded and broken down into their raw materials. Companies convert the original item and then sell the now-usable material. The key advantage of recycling is reduced quantities of disposed waste and the return of materials to the economy. The approach includes recycling programs such as kerb side pickup of recyclables, drop-off centers, buy-back centers that pay you for valuable items and deposit-refund programs for soda and plastic bottles. In China, for example, about 20 per cent of discards are recovered for

**Chart A 3.1**




Source: Urban Development Series Knowledge Papers, World Bank Report. March 2012.

recycling, largely attributable to informal waste picking.

Recovery is applying methods to capture useful material from waste into energy programs. The process includes composting, methane collection, gasification, and digestion. Aerobic composting (with oxygen) uses the windrows method for composting making it less complex and less expensive. The use of segregated waste enhances the quality of compost and its market value in comparison to chemical fertilizers. The anaerobic conditions (without oxygen) generate methane that is either flared or used to generated heat and/or electricity.

Landfill refers to the site used to finally dispose waste from the earlier processes. The landfill sites should be scientifically managed to safeguard the

**Table A3.1: Types of dumping**

| | Operation and engineering measures | Leachate management | Landfill gas management |
|---|---|---|---|
| Semi-controlled dumps | Few controls: some directed placement of waste: informal waste picking: no engineering measures | Unrestricted contaminant release | None |
| Controlled dumps | Registration and placement/compaction of waste: surface water monitoring: no engineering measures | Unrestricted contaminant release | None |
| Engineered landfill/ controlled landfill | Registration and placement/compaction of waste: uses daily cover material: surface and ground water monitoring: infrastructure and liner in place | Containment and some level of leachate treatment: reduced leachate volume through waste cover | Passive ventilation or flaring |
| Sanitary landfill | Registration and placement/compaction of waste: uses daily cover: measures for final top cover and closure: proper siting, infrastructure: liner and leachate treatment in place and post-closure plan. | Containment and leachate treatment (often biological and physic-chemical treatment) | Glaring with or without energy recovery |

Source: Urban Development Series Knowledge Papers, World Bank Report. March 2012.

environment and public health. These sites produce landfill gas (LFG) from the anaerobic decomposition of organic matter and methane burned with or without energy recovery to reduce GHG emissions. Landfilling usually progresses from open-dumping, controlled dumping, controlled landfilling, to sanitary landfilling.

Incineration is synonymous with the process of destruction of waste by converting the organic material to carbon dioxide and water vapour by fire. These materials include very high amounts of packaging materials, paper, cardboard, plastics and horticultural waste. The resulting ash is the incombustible inorganic residue. The process can reduce (with energy recovery) the volume of disposed waste by up to 90 per cent. Incineration without energy recovery (or non-autogenic combustion, the need to regularly add fuel) is not a preferred option due to costs and pollution.

Combined, reduce, reuse and recycle form a complete circle that can preserve natural resources; reduce waste, energy consumption and pollutants; and support healthy living. Even though they sound and appear similar, they are distinct elements in the language of resource conservation.

## Segregation

The primary requirement in the 3R approach is to recognize that different types of waste need to be treated differently and hence the first step is to segregate them. This has proved most difficult in the case of household waste. Getting citizens to segregate waste has been a challenge across the world. But there have been successes even in Less Developed Countries. Nepal has placed individual bins for waste, garden organics and recyclable material. The residents also recycle plastic wraps into rope mats and tumbler coasters that are sold in nearby villages.[1]

Incentives can be mixed with penalties to encourage segregation. At Hospital Lam Wah EE in Malaysia, wastes are segregated and bagged separately at source. The specific guidelines are outlined in the hospital's Infection Control Manual. The recycling project committee members sort the recyclable items, categorize them and weigh them before selling. Non-compliant members are charged with a fine of RM30 (US$8.71). The clinical wastes are both autoclaved and incinerated whereas general wastes are collected by the local authority and taken to the designated landfill. The recyclable wastes are recovered and the revenue is used to help hospital staff in need or to respond to emergency situations.[2]

[1] All Voices. http://www.allvoices.com/contributed-news/13475993-village-in-kathmandu-practices-3r-reduce-reuse-recycle-in-waste-management. Accessed on June 14 2013.

[2] Waste Management World. http://www.waste-management-world.com/articles/print/volume-8/issue-5/recycling-special/3r-practice-in-east-and-south-east-asia.html. Accessed on June 14 2013.

The developed world has been able to use technology in this process. Well known for its leadership in waste management, recycling and resource recovery, South Australia has set up a waste separation unit, which follows automated segregation of waste (magnetic removal of metals, repulsion of aluminium, saves paper) and does manual separation of plastic. The resulting waste is then used for composting. In order to encourage recycle of waste, consumers receive 5 cents for every applicable container that they return to a retailer, or a collection depot. They also have a facility that recycles cathode ray tube (CRT) glass from televisions and computer monitors. CRT glass contains lead, cadmium, phosphor and arsenic, and must be processed to strict specifications for glass to glass recycling.[3]

The challenge of segregation is also faced in the delivery of public services. Street sweeping is considered as one of the services of urban local bodies. The waste consists of litter, plastic, leaves, glass, metal and trash. Keeping the streets clean enhances the aesthetic beauty of the community, avoids pollution and waste from entering into storm drain system. The Southern California city of Long Beach, USA sweeps about 170,000 miles of streets each year, removing about 13,000 tonnes of dirt, garbage, and grit in the process. About 96 per cent of the sweeper debris ends up in a composting facility where it is run through a set of screens that separate trash from sand, dirt, and grit. Paper and any other materials that can be composted go back into the composting facility, where the resulting compost is sold to farmers in the agricultural-rich area.[4]

### Making waste less visible

In Dubai, the company Envac has managed underground automated waste collection systems at the Jumeirah Beach Residences (JBR), since 2006. This system is sealed, almost invisible, clean and odourless and workers never come into direct contact with waste. There is a two-level podium for collecting waste at JBR. Each building in JBR has one or two garbage chutes and the garbage is collected at a vertical storage section. For the retail, food and beverage areas, which are no more than two floors, there is a separate collection area for garbage. All the storage areas are connected through a pipe network. A control room within the facility is equipped with a computer system that keeps track of the waste collected and dispatched each day. There are huge valves along the pipe network that bring in the waste to the collection tanks that can each contain 10 tonnes. The project is split over two plots and has two separate collection stations. One

[3] Zero Waste SA. http://www.zerowaste.sa.gov.au/upload/resource-centre/publications/reuse-recovery-and-recycling/ZWSA_Upclose_Industry_web.pdf. Accessed on June 14 2013.

[4] North American Sweeper Magazine. http://www.nasweeper.com/2010/06/main_articles/street-sweeping-the-grit-that-keeps-on-giving/. Accessed on June 14 2013.

collection station houses three containers and the other one, two containers. The refuse falls down into a compactor, which compacts the refuse in the sealed container. The transport air then passes through dust and deodorant filters and a silencer. When the containers are full, normal trucks collect them for emptying for further transportation to incineration facilities, composting plants or landfills. Envac truck finishes the job in about three minutes thereby significantly reducing carbon emissions into the air and degradation of roads, and traffic chaos. [5]

Abu Dhabi's Centre of Waste Management launched the second phase of the electro-hydraulic underground waste collection system in Al Khalidiya. This system replaces the existing bins, eliminating odours, scavengers and litter around collection points, thus improving the aesthetics and ensuring a cleaner environment for residents. Eight large containers, which are encased within a metal frame and then sunk inside a concrete sleeve in the ground, were built in Al Khalidiya. The only visible element of the system at ground level is a steel receiver unit through which the waste is deposited. The containers are fitted with censors sending alerts when 75 per cent full, enabling more efficient waste collection by reducing unnecessary traffic. Specially adapted waste trucks will be used to lift the containers out of the ground, empty and replace them. The system provides centralised and strictly regulated waste collection facilities for approved users and prevents unauthorised dumping of waste. This underground system, with 20 cubic metre containers, will be installed at 115 locations across Abu Dhabi by July 2013, at sites which have been chosen on several bases such as the volume of generated waste and population densities. The new system will reduce the number of daily trips, which will reduce cost, fuel consumption and reduce the carbon footprint according to Kyoto Protocol. [6]

## Reduction

The scope for waste reduction is more widespread than is commonly believed. In 2009, the UK's top grocery retailers, brands and manufacturers committed to an industry-wide food waste reduction objective. This was delivered under WRAP's (Waste & Resources Action Programme) Love Food Hate Waste campaign, which was expected to save UK consumers of more than £370 million. This equates to a saving of almost 700,000 tonnes of $CO_2$ – the same as taking 220,000 cars off the road for a year. Signatories of the Courtauld Commitment – a voluntary agreement led by WRAP - had agreed to work together to help reduce the

[5] Clean Middle East. http://www.cleanmiddleeast.ae/articles/44/envac-environmentally-sustainable-waste-management.html. Accessed on June 14 2013.

[6] Clean Middle East. http://www.cleanmiddleeast.ae/articles/150/abu-dhabi-launches-second-phase-of-underground-waste-collection-system.html. Accessed on June 14 2013.

amount of food the nation's householders throw away by 155,000 tonnes by 2010. WRAP had identified fresh fruit and vegetables, bakery products, dairy, meat and fish products as the highest source of household food waste. Action was focused on identifying solutions and how areas such as labelling, pack size range, storage advice and packaging be designed to keep the food fresher for longer time which could help households from wasting food. To date, a number of retailers have implemented initiatives on food waste reduction through their involvement in the Courtauld Commitment. WRAP's Love Food Hate Waste campaign also worked with householders to help them get the best from the food they bought, save money and reduce the generation of waste and $CO_2$. Some of the signatories such as Marks and Spencer have introduced innovative packaging solutions. They now pack beef in skin packs instead of plastic trays thereby reducing packaging by 69 per cent. The skin pack also keeps the meat fresher for four days i.e., it is less likely to go waste. The store Sainsbury's has implemented new fresh fruit and vegetable storage guidance for customers in the store and their website. They also offer advice and menu ideas for using leftover food under the "Love your Leftovers" campaign. Warburtons store has reduced the weight of their loaves of bread from 800gms to 600gms. This size of bread is now popular among customers and has helped reduce their earlier wastage. TESCO has adopted modified atmosphere packaging thereby extending shelf life of grapes and reducing need for additives. They now use a shrink film for chickens that enhances its product life by two days. Asquith and Dairies (ASDA) is another store that has modified its strategy to save food waste. Their multisave strategy now includes more variety of fruits, vegetables and salads instead of restricting their choice. This is applied to food that cannot be frozen. For example there are offers like: 'any 2 varieties across citrus' or '2 for £2 across prepared salads, potatoes and sweet corn. [7]

Waste reduction is possible even in critical areas like health care. The California Department of Health Services (CDHS) Medical Waste Management Program works with hospitals state wide to develop source reduction plans, including goals for the virtual elimination of mercury, and lessening the creation of medical waste. A simple method used to reduce waste was to eliminate the use of needles or sharp components wherever feasible. Substantial progress has been made toward developing innovative design improvements in medical devices, alternative medication delivery systems, and injection alternatives.[8]

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[7] WRAP. http://www.wrap.org.uk/content/uk-grocery-sector-commits-reduce-household-food-waste. Accessed on June 14 2013.

[8] California Department of Public Health. http://www.cdph.ca.gov/programs/ohsep/Documents/medicalwaste.pdf. Accessed on June 14 2013.

By restructuring its supply cards and eliminating extra waste, the ICU at Portland Va Medical Center saved approximately US $ 80,000 annually. The Center had realised that many products were being taken from locked sterile supply cabinets and unintentionally wasted since, once removed, they could not be put back—even the unopened, unused supplies. This resulted in unnecessary supplies piled up for every patient. The staff revamped the supply list and set up cart drawers resulting in easier stocking.[9]

## Recovery

Recovery from waste is critical in reducing its diversion to landfill or final disposal. In Brazil, the Gramacho Landfill was receiving over three million metric tons of waste per year until 2012, producing at its peak 119 million $Nm^3$ methane (normal cubic meter $CH_4$) through decomposition within the landfill. Through a plan to install a methane capture system throughout the landfill, they were able to leverage Clean Development Mechanism financing to reduce the climate change impact of the Gramacho operations and to create a potential income stream in the future, through the sale of energy to a nearby Petrobras facility.[10] In UK, the company GASREC will open a gas station which will supply Bio LNG - a blend of liquefied natural gas (LNG) and liquid biogas (LBM). The gas is produced from food waste treated at anaerobic digestion plants, as well as landfills and other sources. When substituted for diesel, Bio-LNG reduces fuel costs, cuts $CO_2$ by up to 35 per cent, and delivers 90 per cent reduction of particulate matter emissions and 60 per cent reduction in Nitrogen Oxide.[11]

In Dhaka, a research-based organization, Waste Concern, initiated a pilot project on community-based decentralized composting projects in 1995. Waste collected from door to door was composted in a decentralized manner (employing barrel, aerator and box types of composting) and marketing of compost and recyclables. So far, these concepts have been replicated in 20 cities and towns in Bangladesh. Waste Concern has installed a large-scale 700 tonnes per day composting plant in Dhaka city producing 50,000 tonnes of organic fertilizer and reduced greenhouse gas emissions by around one million tonnes under the Clean Development Mechanism of the Kyoto Protocol.[12]

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9 Healthier Hospital Initiative. http://healthierhospitals.org/get-inspired/case-studies. Accessed on June 14 2013.

10 US Environmental Protection Agency. http://www.epa.gov/jius/projects/rio_de_janeiro/gramacho_landfill_gas_to_energy_system.html. Accessed on June 14 2013.

11 Waste Management World. http://www.waste-management-world.com/articles/2013/06/new-refuelling-station-to-fill-trucks-from-food-waste—landfill.html. Accessed on June 14 2013.

12 Waste Concern. http://www.wasteconcern.org/Publication/draft_national_3R_strategy.pdf. Accessed on June 14 2013.

The community in Punta Taytay village in the Philippines was educated and provided technical assistance in the implementation of solid waste management (collection, monitoring and waste processing). This resulted in the build and maintenance of its Material Recovery Facility (MRF) and a pilot scale static pile composting unit. Every household has its own waste bins and has learnt to segregate its waste into degradable and non biodegradable. The segregated recyclables are sold to junk shops by village officers. These efforts have resulted in 50 per cent reduction in its waste generation. There has been an increase in active participation due to benefits realised from compost and segregated recyclables. This has resulted in establishing a MRF and small scale composting unit elsewhere in the region. [13]

The technology Plastic2Oil (P2O) processor has pioneered the development of a process that derives ultra-clean, ultra-low sulphur fuel (oil) which does not require further refining, directly from unwashed, unsorted waste plastics. The P2O process is permitted by the New York State Department of Environmental Conservation (NYSDEC) for up to 4,000 lbs. of plastic feedstock per hour at a facility in New York. Results from the final stack test show that the conversion ratio for waste plastic into fuel averages 86 per cent and approximately 1 gallon of fuel is extracted from 8.3 lbs. of plastic (1 litre of fuel is extracted from every kilogram of plastic).[14]

In Bangladesh, a Gazipur based private company has helped generate electricity from biomass to rural areas. Rice husks were used for the biogas plant. Three bags of rice husks per hour are used for generation of 35-40 KW of power. At present about 500 households/shops are the beneficiaries of the project.[15]

## Construction and Demolition waste

Construction and Demolition (C&D) waste often contains bulky, heavy materials including concrete, wood, asphalt, gypsum, metals, bricks and plastics. Reducing C & D waste would significantly conserve landfill space and impact on environment.

In Japan, construction waste is converted into construction material to be re-used instead of using virgin raw materials. Crushed chips are converted into pillars and sills.[16]

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[13] Asian Institute of Technology. http://www.faculty.ait.ac.th/visu/NGOs/pdfs/For%20Uploding%20Finalised%2020%20Nov%2008/SJ-BALAYAN_PHILIPPINES.pdf. Accessed on June 14 2013.

[14] 3R Knowledge Hub. http://www.3rkh.net/index.php? option=com_phocadownload &view=file&id=567:plastic2oil-processor&Itemid=238. Accessed on June 14 2013.

[15] Waste Concern. http://www.wasteconcern.org/Publication/draft_national_3R_strategy.pdf#page=22 &zoom=auto,0,662. Accessed on June 14 2013.

[16] Ministry of Environment, Government of Japan. http://www.env.go.jp/recycle/3r/en/approach/02.pdf. Accessed on June 14 2013.

The Al Dhafra facility, UAE is designed to process between 5,000 to 7,000 tonnes of C & D waste on a daily basis. The incoming waste is segregated at the stock-piling area during which the recyclable materials are recovered, such as steel and plastics. Unsuitable materials are rejected and diverted to the nearby Al Dhafra landfill. It takes approximately three to four minutes for unprocessed material to be converted into the recycled product. The facility is expected to produce a range of materials including road base, sub base, structural fill, trench bedding, hardstand and low dust asphalt products. The project enables 50 per cent reduction in waste to landfill; reduced greenhouse impact compared to production and transportation of quarried products, and reduced use of natural resources. This will reduce the reliance of Abu Dhabi on the quarries of other Emirates and hence, reduce the carbon footprint of construction projects in Abu Dhabi.[17]

In South Australia, the Wingfield Resource Recovery and Waste Transfer Station includes construction of a new Material Recovery Facility for recovery from mixed commercial and industrial, and construction and demolition waste. The center will provide a facility to receive material direct from residents or kerbside hard waste collections accepting general waste, hazardous waste and other difficult waste sources such as mattress. They also have a state of the art commercial and industrial materials recovery and sorting centre, with a capacity to divert an extra 100,000 tonnes away from landfill every year. A specialist processor crushes and recovers rubble for use in construction and road base, and grinds combustible materials for use as an alternative feed to fossil fuel.

Another method of recovery from C & D waste is followed by Resource Co. It is South Australia's largest specialist processor of construction and demolition, and commercial and industrial waste. This company has received grants to conduct trials for using recycled asphalt back into new asphalt roads. This Bitumix can be used as a more cost effective alternative to the more expensive hot mix. The plastic obtained in C & D waste can also be recycled to be used instead of new materials for construction. Plastics Granulating Services (PGS) is a company in South Australia that uses advanced recycling services to process post-consumer and post industrial waste plastics. It has received a grant to install equipment for shredding, washing and drying plastic films with a focus on polyethylene-based film. This new equipment has doubled the company's capacity to process mixed plastic waste into recycled plastic products such as posts and bollards.[18]

[17] Clean Middle East. http://www.cleanmiddleeast.ae/articles/244/construction-and-demolition-debris-will-no-longer-be-a-waste.html. Accessed on June 14 2013.

[18] Zero Waste SA. http://www.zerowaste.sa.gov.au/upload/resource-centre/publications/reuse-recovery-and-recycling/ZWSA_Upclose_Industry_web.pdf. Accessed on June 14 2013.

## Reuse

There is scope to leverage the fact that what is considered waste by one user could have value for another. This potential to buy waste is well established in several societies, like the sale of old newspapers in India. There are examples elsewhere in the world of stores buying more diverse waste. The Zero Baht Shop in Thailand is one example. The shop is a community grocery store in which recyclables are exchanged with daily grocery items. The store has a fixed price for each type of waste. It was conceptualized in 2001.

Workshops are also conducted on handling waste, waste sorting and other business management strategies. Provision has been made for the waste pickers as well. The shop provides waste pickers with identity cards, license plates to the Saleng tricycle, jacket, gloves, surgical masks, reflectors and weighing machines. The shop earns a profit of 20,000 to 30,000 Baht a month. This initiative also provides for Garbage Banks. The Garbage Bank allows the members to deposit their savings (by crediting the recyclables at the Zero Baht Shop), or by depositing two glass bottles a day or one Baht a day for two continuous months to benefit from welfare schemes. Two per cent of the income of the Zero Baht Shop is also added to this welfare fund. This fund is then utilized for the benefits of members for medical insurance, study loans and other personal benefits.[19]

The Minnesota Pollution Control Agency offers specific guidelines for using the street sweeping waste as a daily cover on sanitary and construction landfills, if chemically proven fit. The agency recommends that the refuse should only be used as a top cover in landfills that have groundwater monitoring mechanisms in place. The other re-use options for screened street waste are suggested to be mixed with new salt and sand mixtures to treat roads, parking lots, and sidewalks in the winter; to fill potholes and then cover them with asphalt; to fill in the median strips or along road shoulders on city-owned public right of ways; or to use as an aggregate in concrete or asphalt. With chemical testing, the options can be increased. The debris can also be used as fill on industrial or commercial properties, or it can help absorb hazardous materials in an emergency.[20]

There are other forms of reuse that call for strict adherence to safety norms. A company in California, Kaiser Permanente (KP), safely re-uses single-use medical devices (SUDs). This reprocessing avoids millions of dollars in SUD purchasing costs and overall waste disposal costs. This SUD reprocessing is done in strict accordance with

[19] 3R Knowledge Hub. http://www.3rkh.net/index.php? option=com_phocadownload &view=file&id=634: integration-of-infromal-and-formal-sectors-for-3r&Itemid=238. Accessed on June 14 2013.

[20] North American Sweeper Magazine. http://www.nasweeper.com/2010/06/main_articles/street-sweeping-the-grit-that-keeps-on-giving/. Accessed on June 14 2013.

U.S. Food and Drug Administration (FDA) regulations to ensure the quality and performance of the reprocessed SUDs are safe and effective for clinical use. The company also recovers and redistributes surplus medical supplies and equipment to safety-net clinics and underserved health care facilities around the world.[21]

Beth Israel Deaconess Medical Center adopted the single use device (SUD) re-processing program to reduce medical waste and its associated costs. The center completed the buy-back of its first two identified reprocessed SUD categories, tourniquet cuffs and arthroscopic shaver blades, within the first few months of the launch. In 2012, SUD program generated saving of US$ 375,000 and diverted nearly 10,000 lbs of medical waste from landfills and/or incinerators.[22]

An effective reuse process can also link local waste to global markets. TRAID a UK registered charity has collaborated with the London Borough (LB) Bexley (unitary waste authority in South East London) to deliver a kerbside collection service. LB Bexley has a population of 228,000 in 95,100 households. In 2009, as per analysis the waste composition showed that textiles comprised two per cent of the residual waste stream. This resulted in kerbside collections of textiles to help meet early, the Boroughs' recycling target of 55 per cent. The first monthly collection trial ran from June to November 2011 that diverted over 2,400 kg of textiles from landfill. The original trial area serviced 8,000 properties. The second trial run for another six months covered an expanded area of 12,000 properties. TRAID funded the trials and received the income from the sale of the clothes. The service was free to LB Bexley. Bags distributed to residents during the first phase of the trial proved expensive, accounting for up to 50 per cent of the total cost of the scheme. During the second trial TRAID distributed stickers to residents, to be applied to any bag put out for collection. Post collection of the clothing, the highest quality clothing was removed and resold in TRAID's ten shops in London. Material that TRAID could not resell in the UK was passed on to a wholesaler who sells to markets in the UK and also exports to Europe, West Africa and Pakistan. [23]

## Recycle

The potential for recycling is quite vast especially when there is a willingness to innovate. In Melbourne, Australia a recycling program operating in Victoria and New South Wales (NSW) has turned 33,000 lbs of hospital PVC waste into industrial

[21] Kaiser Permanente. http://xnet.kp.org/newscenter/aboutkp/green/docs/kp-waste-reduction-factsheet-2013.pdf. Accessed on June 14 2013.

[22] Healthier Hospital Initiative. June 14 2013. http://healthierhospitals.org/get-inspired/case-studies. Accessed on June 14 2013.

[23] WRAP. http://www.wrap.org.uk/sites/files/wrap/Textiles_Guide_CS_Bexley.pdf. Accessed on June 14 2013.

hoses and non-slip floor mats. Australia's national PVC industry body, the Melbourne-based Vinyl Council of Australia, is collaborating with manufacturers to recycle commonly used PVC medical products, specifically tubing, intravenous fluid bags and oxygen masks into non-slip mats and industrial hoses, general PVC compounds, carpet backing and vinyl floor tiles. [24]

Kaiser Permanente also recycles the blue wrap, the material that is used to preserve the sterility of medical instruments. The material feels like soft paper, but is actually made from heavy-duty polypropylene plastic that can take years to disintegrate in landfills. Blue wrap can be recycled into wash buckets, lawn furniture, flowerpots, squirt bottles, plastic lumber for picnic tables and thousands of other commonly used products.[25]

Effective recycling may also require institutions to work together. In the US, in an effort to have healthier and sustainable hospitals, the Healthier Hospitals Initiative (HHI) was created by eleven of the largest, most influential U.S. health systems. This comprised of over 490 hospitals with more than US$ 20 billion in purchasing power, worked with Health Care Without Harm (HCWH), the Center for Health Design and Practice Greenhealth. The enrolment to HHI is voluntary.

The programme was formally launched in April 2012 and has over 700 hospitals registered. The success of HHI speaks for itself as over 50 million lbs of materials have been recycled and 61.5 million lbs of construction and demolition waste was kept out of landfills through re-use and recycle.[26]

In Singapore, 42 per cent of horticultural waste was recycled. The waste includes tree trunks and branches, plant parts and trimmings generated during the maintenance and pruning of trees. This and wood waste is sent to recycling companies to be grinded into wood chips. These wood chips are then used for composting, to make new products, mixed with binders to produce pallets, doors and floorings. Some recycling companies use the wood chips as a fuel in cogeneration plants to produce heat and power simultaneously, whereas other companies process the wood chips and recycle them into charcoal products.[27]

In the UK, the drain silt is recycled with the use of silt bags. These strong porous bags can be sited on relatively flat, smooth

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24 Plastics News. http://www.plasticsnews.com/article/20130515/NEWS/130519954/some-australian-hospitals-recycling-pvc-medical-waste#. Accessed on June 14 2013.

25 Kaiser Permanente http://xnet.kp.org/newscenter/aboutkp/green/docs/kp-waste-reduction-factsheet-2013.pdf. Accessed on June 14 2013.

26 Healthier Hospital Initiative. http://healthierhospitals.org/get-inspired/case-studies. Accessed on June 14 2013.

27 Zero Waste SG. http://www.zerowastesg.com/2008/12/08/wood-and-horticultural-waste-recycling/. Accessed on June 14 2013.

ground adjacent to the pond, lake or canal. The silt is pumped into the bags with the Truxor Amphibious Machine and silt pumping attachment. The material that the bags are made of allows the silt be retained whilst the clean water seeps out. Once the water has drained out of the bags, they can be opened and the silt used for any landscaping needs on site. Silt consists of decaying flora and fauna, as well as soil erosion and run off from the surrounding terrain. It is rich in nutrients and makes an excellent planting medium. [28]

### Enforcing waste management

Germany followed a stringent Ordinance on the Avoidance and Recovery of Packaging Waste in 1998. This led to 65 per cent of packaging recovery and 45 per cent share of recycling by weight. As per the ordinance, manufacturers were encouraged to avoid packaging. Priority was given to reuse of packaging, recycling and other forms of recovery compared to disposal of packaging waste. Manufacturers and distributors were obligated to accept returned packaging after use.

In Canada, mandatory provisions have been made for used oil deposit/ collection facilities by all vendors of lubricants. This was made to target used oil produced by different users and has enabled the return of used oil to the point of purchase for reuse or recovery. Under the Law for Promotion of Effective Utilization of Resources, Japan reached 90.3 per cent of glass cullet usage rate by recycling products made of glass.

In the United States of America, recycling and composting activities prevented about 64 million tonnes of material from ending up in landfills and incinerators. USA recycles 28 per cent of its waste, a rate that has almost doubled during the past 15 years. 42 per cent of paper, 40 per cent of plastic soft drink bottles, 55 per cent of aluminium beer and soft drink cans, 57 per cent of steel packaging, and 52 per cent of major appliances are now recycled. [29]

[28] Aquatic Solutions, UK. http://aquatic-solutions.co.uk/silt-recycling-with-silt-bags/. Accessed on June 14 2013.

[29] Global Development Research Center. http://www.gdrc.org/uem/waste/3r-minimization.html. Accessed on June 14 2013.