Chapter 6
Central and State Urban Infrastructure Programs in Karnataka: What Do We Learn?

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Introduction, Objectives, and Methodology

The world population is expected to become two-third urban by 2025. While the urbanization phenomenon is widely accepted as being an inevitable by-product of development, there are many undesirable outcomes that have resulted from urbanization. With rapid increases in urban population and demand for urban infrastructure services, the capacities (both human and financial resources) of local governments in many countries are overburdened. While the Jawaharlal Nehru National Urban Renewal Mission for the 63 largest and important cities was initiated by the Government of India in 2005, there is a move away from the largest cities towards the smaller and medium towns (see evidence from the saturated growth of population in the largest metropolitan areas of the country in this volume by Sridhar and Kashyap; also see Sridhar (2004), which quotes evidence of business process outsourcing (BPO) firms in India classifying various cities in the country (including mid-tier and smaller cities) based on how much training of labor force is needed in every city category). Some urban infrastructure and poverty alleviation programs such as the Urban Infrastructure Scheme for Small and Medium Towns (UIDSSMT) exist for the smaller and medium towns in India. In the south Indian state of Karnataka there is the flagship program for urban areas of the state, called the Mukhyamantrigala Nagarothana Yojana consisting of two components—the special 100 crore program for the seven city corporations in the state and the Chief Minister's Small and Medium Towns Development Program (CMSMTDP). However, little is known about the functioning and effectiveness of these programs. Hence, there is a need to evaluate the performance of urban development programs in terms of their cost effectiveness and timely completion in the smaller and medium towns of India.

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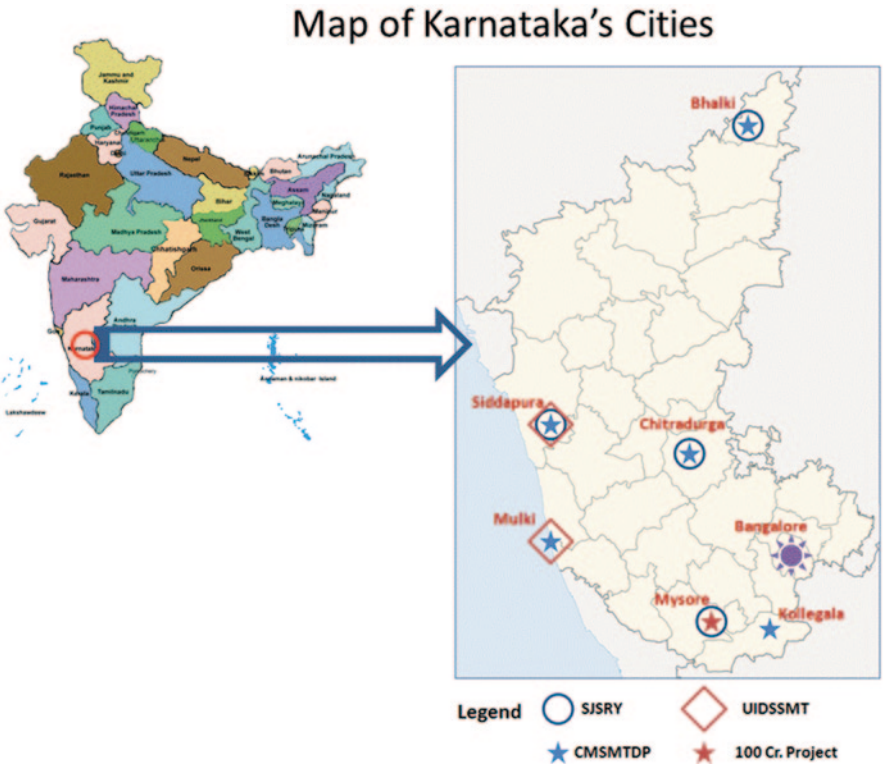
We studied the above programs and their components in the south Indian state of Karnataka taking the cases of Mysore city corporation (for the special ₹ 100-crore package program), the cases of Bhalki (northern part of the state), Kollegal (southern part of the state), Chitradurga (eastern part of the state), Siddapura (western part of the state), and Mulki (western part of the state) for the Chief Minister's Small and Medium Town Development Program (CMSMTDP) and UIDSSMT (in the case of Mulki and Siddapura). The sample of cities/towns we have chosen is representative of all geographic regions of the state. A map of India and that of Karnataka shows the selected cities/towns in the state.



In this chapter, we study two urban infrastructure programs, i.e., UIDSSMT, which is a centrally (Government of India) sponsored program to boost infrastructure in small and medium towns of the country, and a state-sponsored (Government of Karnataka, GoK) program, the Mukhyamanthrigala Nagarothana Yojane (MNY).

Objectives

The objectives of this chapter are as follows:

1. Conduct expenditure analysis of the above-mentioned programs. It covers the following aspects:

a. Budget analysis of various heads of expenditure, including an analysis of the process of determining unit cost of various activities under a project.
b. Utilization of expenditure—we examine outputs to study if there are output measures of schemes chosen and if yes, whether they are adequate, whether systems for effective monitoring of outcomes are in place.
c. We study what norms, if any, are used in allocating and monitoring expenditure.

2. We map the processes that can be used to make the expenditures efficient and cost effective and suggest measures to fill the gaps in this regard.

a. We study the processes and/or mechanisms for implementing the programs under the selected schemes.
b. We study the mechanisms for monitoring the way implementation of programs occurs in the field.

Methodology

We studied a sample of projects taken up under each of these schemes in a sample of cities. We chose completed projects for each of the programs which have been completed or were nearing completion to examine the issues mentioned above. We studied the above programs and their components taking the cases of Mysore city corporation (for the special ₹ 100-crore package program), the cases of Bhalki (northern part of the state), Kollegal (southern part of the state), Chitradurga (eastern part of the state), Siddapura (western part of the state), and Mulki (western part of the state) for the CMSMTDP and UIDSSMT (in the case of Mulki and Siddapura). The sample of cities/towns we have chosen is representative of all geographic regions of the state of Karnataka. Within each of the programs, we reviewed the full list of ongoing and completed projects we obtained from the Directorate of Municipal Administration (DMA) and the Urban Local Body (ULB), and chose a sample of completed works based on their sector (roads, drains, subway, grave yard, street lights, or solid waste management), and monetary value of the estimated cost of the works.

We visited each of the above cities/towns to evaluate the programs. First, we visited various departments and officials in the DMA (for the MNY) and Karnataka Urban Water Supply and Drainage Board (KUWSDB) (for the UIDSSMT) to understand the process of fund flows for each of the programs so that it gave us some idea of the offices in the cities with whom we needed to meet. We developed detailed questionnaires for each of the programs to enable us to assess various aspects of the terms of reference for the study and sent them to the respective cities/towns before our visit to each of the cities/towns.[1] In addition to the city officials who were our primary liaison and helped us to obtain the information, we also talked to stakeholders (the public) who were directly impacted by the program, randomly. Further, we had a chance to talk to the contractors who implemented the works.

[1] These questionnaires are available upon request.

Literature Review

India's high-powered expert committee on urban infrastructure recently estimated that ₹ 30,981 billion (at 2009–2010 prices) of capital expenditure over a 20-year period, i.e., 2012–2031, would be needed to bridge gaps in urban infrastructure. Without roping in the private sector, there is no way to bridge such telling gaps. When projects are efficiently implemented, the capital requirements to complete them are also less when compared to one in which cost and time overruns occur. Cost and time overruns decrease the efficiency of projects and increase the cost of implementation. Given this, how can we reduce cost and time overruns in projects? Despite the importance of this question, there are few estimates of cost and time overruns in infrastructure projects. Even rarer are the studies based on completed projects in the Indian context save one by Singh (2009) and a preliberalization one by Morris (1990).

The study by Singh (2009) investigates the various issues related to delays and cost overruns in publically funded infrastructure projects. The following questions are posed and answered: How common and how large are the time and the cost overruns? What are the essential causes behind these delays and cost overruns? Are the underlying causes statistically significant? Are contractual and institutional failures among the significant causes? What are the policy implications for planning, development, and implementation of infrastructure projects? That study is based on, by far, the largest data set of 894 projects from 17 infrastructure sectors. Among other results, it showed that the contractual and the institutional failures are economically and statistically significant causes behind cost and time overruns.

The preliberalization study by Morris (1990) arrives at rough estimates of the delays and cost overruns, and the opportunity cost in terms of the extra "capital X time" that is used up. The study finds that cost overruns (at 80 %) and the extra "capital X time" incurred (about 190 %) are very large, even after removing the increase due to inflation. The reasons for the same are also identified and rated. Factors internal to the public sector system and government largely account for the delays and cost overruns: poor project design and implementation, inadequate funding of projects, bureaucratic indecision, and the lack of coordination between enterprises.

This chapter adds value and depth to this literature by studying the institutional processes of program implementation and computes cost and time overruns in infrastructure programs, taking the case of different levels of government. It also makes a number of policy recommendations based on its findings. What we found is interesting and has implications for the cost-effectiveness and timeliness of infrastructure projects in India.

Overview of Chapter

This chapter is organized as follows: first, we describe the program which is state (i.e., Government of Karnataka) sponsored and state centric in its focus, the MNY (Section 3), followed by a study of the centrally (Government of India) sponsored

UIDSSMT (Section 4). Then we compare the two programs across various parameters (Section 5). Our summary of findings and related policy recommendations for the respective programs is covered in each of the sections at the end.

The Case of Mukhyamantrigala Nagarothana Yojana (MNY)

In Karnataka, apart from Bangalore, there are seven city corporations, 44 city municipal councils, 68 town municipal councils, and 94 town panchayats. The rapid pace of urbanization in Karnataka has left a huge "infrastructural deficit" in all the cities/towns. To address these gaps, focus upon the all-round development of cities/towns, create and expand municipal services, and for the benefit of the smaller towns and cities in the state, the government of Karnataka started the MNY in its budget for 2008–2009 (continued in 2009–2010 and 2010–2011). It was decided to provide ₹ 600 crores under this scheme for specific development programs such as drinking water, sewerage system, and road development. Thus, while the UIDSSMT is centrally sponsored (with state share), but is state centric in its focus, the MNY is state sponsored and state centric in its focus. Although the MNY was announced in 2008–2009, it is a combination of several existing special schemes which had been in existence for some time, which entail construction of roads, bridges, and tourism complexes within city limits. The MNY has two components: one is the special ₹ 100-crore package program for the seven city corporations in the state (apart from Bangalore) and the other one is the CMSMTDP. Thus far, about 1,370 works have been undertaken under the ₹ 100-crore program for each of the seven City Corporations. Under the CMSMTDP, as of January 2011, 21 district headquarter ULBs (City Municipal Councils—CMCs) got ₹ 15 crores each, 148 taluk headquarter ULBs got ₹ 5 crores each and the remaining ULBs (42 in number) managed to get ₹ 2 crores each. As of end-January 2011, a total allocation of ₹ 1,454 crores had been made for this program, with 8,087 works approved, out of which 2,645 works covering road and drainage, water supply, welfare of minorities such as the scheduled castes and scheduled tribes (SC & STs), and improving infrastructure facilities in slum areas being completed as part of the CMSMTDP. Both these components of the MNY are evaluated in this section.

Progress in the Special ₹ 100-Crore Program

Table 6.1 summarizes the progress under this program for all the municipal corporations in the state.

The utilization of funds under this program in some cities such as Bellary is greater than 100% indicating that they were able to leverage their own funds with those received under the special ₹ 100-crore program. Apart from Bellary, the utilization of funds is in the range of 75% (Belgaum) to 95% (Davanagere). This utilization is especially encouraging because it shows that the funds were much needed for projects which were likely neglected in the cities earlier.

Table 6.1 Summary of financial progress, special ₹ 100-crore program, all city corporations, February 2011. (Source: Karnataka Directorate of Municipal Administration)

Number	Municipal corporation	Released funds (in lakhs of ₹)	Utilized funds (in lakhs of ₹)	% Utilization	% of works completed
1	Davanagere	9,100	8,600	94.5	91
2	Bellary	9,000	9,032.61	100.3	82
3	Mangalore	8,600	7,575.62	88.1	65
4	Hubli–Dharwad	8,800	7,474.6	84.93	69
5	Gulbarga	7,100	6,100	85.9	52
6	Mysore	7,100	5,776.28	81.35	88
7	Belgaum	5,500	4,102.46	74.5	47
	Total	*55,200*	*48,661.57*	*88.15*	*73*

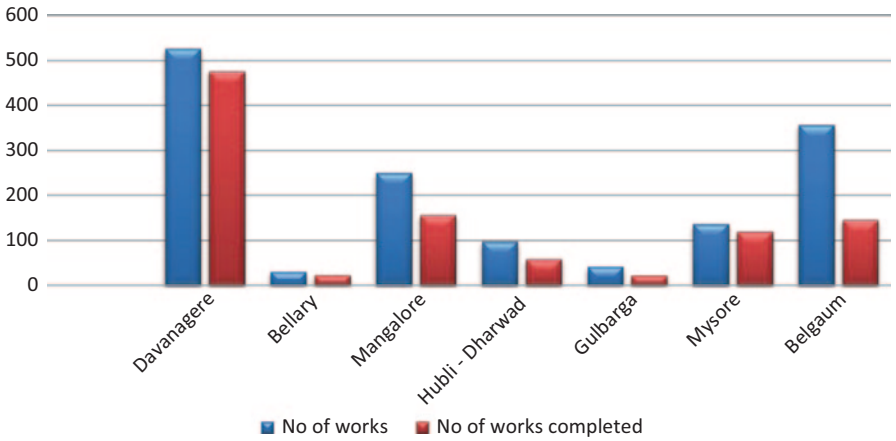


Fig. 6.1 Number of works approved and completed, special ₹ 100-crore program, all city corporations, Karnataka, February 2011

As of February 2011, while the highest number of works approved was in Davanagere, the city corporations in which a majority of the works had been completed are Bellary, Gulbarga, and Mysore (see Fig. 6.1). In Belgaum, we note a steep deviation in the number of works approved and those that were completed. We are unable to explain this since we did not study that city for this program.

Figures 6.2 and 6.3, respectively, show the sectoral allocation of funds deployed as part of the special ₹ 100-crore program in the state (seven city corporations) and in Mysore, the city that was chosen for study of the program due to its proximity to Bangalore. As is evident, the bulk (69%) of the spending at the state level (taking into account the seven city corporations) in this program is on roads and drains, followed by others (consisting of street lights, aquarium, traffic signals, and Kala Bhavan). Mysore also follows this allocation of sectoral spending quite closely, spending the largest proportion (56%) of its funds on roads and drains, but spending a little more on others (18%) and gardens (12%).

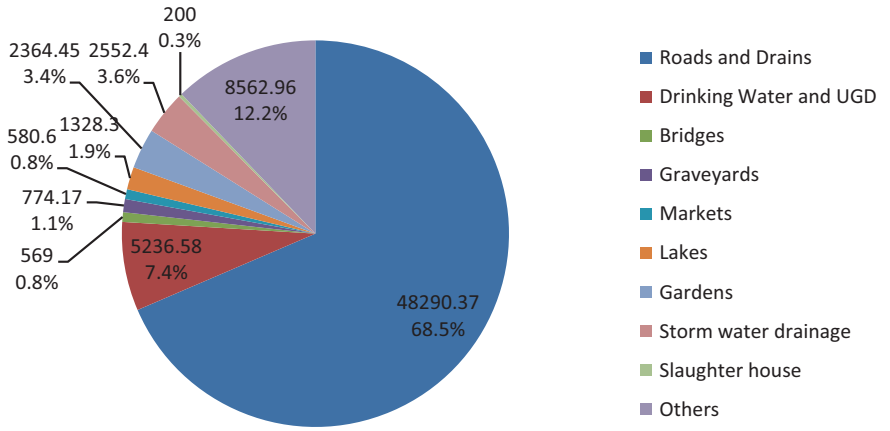


Fig. 6.2 All city corporations, Karnataka, sectoral spending, ₹ 100-crore program, February 2011

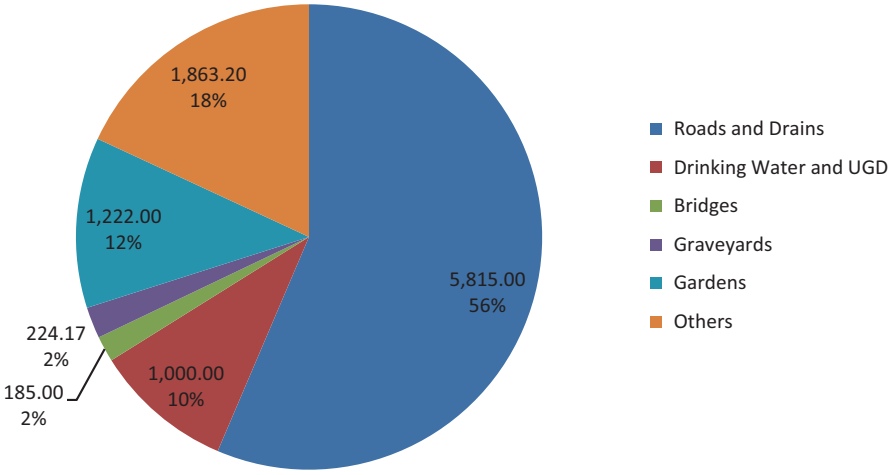


Fig. 6.3 Mysore, sectoral spending, ₹ 100-crore program, February 2011

We observed in the case of the Mysore special ₹ 100-crore program that the estimated costs for non-road projects (which include a combined road and drain work and a pedestrian subway) are much higher than they are for road projects (Table 6.2).

We make this comparison understanding that costs and technical specifications across sectors vary widely. We observed that the tender amounts for all works (irrespective of the sector) are higher than the estimated cost from the action plan. On average, while the estimated cost from the action plan for the selected works is only ₹ 48.75 lakhs, the approved tender cost is ₹ 51.55 lakhs (Table 6.2), accounting for a 5 % cost overrun. The maximum cost overrun was 9 % and at the minimum the cost

Table 6.2 Summary of selected works, Mysore, special ₹ 100-crore program

Sector	Name of work	Estimated cost from action plan (in lakhs ₹)	Tender cost (in lakhs ₹)	% Cost overruns
Roads and drains	Constructing a drain and providing asphalting to Seetharama Rao Road in Ward No. 3	10	10.4	4
Roads	Improvement of Road Arunodaya ITI College, right side cross road from 11th to 13th cross at Jantha Nagar Ward No. 24	10	10.27	2.7
Walkways	Construction of a pedestrian subway at Sayyaji Rao Road—near BATA	100	103.9	3.9
Roads	Improvements to Pulikeshi Main Road in Mysore City	75	81.64	8.85
Average, road projects		42.5	45.96	5.78
Average, nonroad projects		55	57.15	3.95
Average, all projects		48.75	51.55	4.86

overrun was 2.7% (again another road project). We discuss later how Mysore compares with other cities in the special ₹ 100-crore program regarding cost overruns.

Based on our discussions with the Mysore city corporation officials, we found that whenever works required excavation (just as in the case of a pedestrian subway), land acquisition, or felling of trees, there was uncertainty regarding the time frame and the budget.

Overall, on average, for both the road projects in Mysore completed under the special ₹ 100-crore program, we found that the total time taken from submitting the "action plan" to the tender agreement was 75 days (or 2.5 months). Interestingly, the work with the maximum cost overrun was the one with the minimum time delay and was completed (1.5 months) ahead of schedule.

The city makes the payment to the contractor only after a third party inspection that certifies satisfactory completion of the work.[2] We did look at all the third party inspection reports which provide a detailed technical assessment (with engineering specifications).

We recommend that intermediate reports (including instances when the third party finds fault with the works completed, see footnote 3) be made part of the documentation for every work so that the contractors' quality of work can be tracked. Further, the current completion reports are comprehensive in the sense that they refer to the technical quality of all materials used. We recommend that the summary of an overall assessment be provided by the third party independent consultant.

[2] We found that all third party inspection reports certify satisfactory completion of the work for the various components (iron, steel, cement, jelly, and so forth). This sounded too good to be true to us. Hence, when we probed further into this, we found that there are certain intermediate steps in which when the third party finds some fault with the work or the quality of material used, they convey that informally to the city and the contractor who then rectifies the work and a final satisfactory completion report is issued.

Such an overall assessment should consist of norms, specifications, standards, and their compliance. The assessment should ideally also mention whether the outputs were delivered on time within the cost agreed upon, the reasons for delays, if any, and any action taken against undue delays, if applicable. We did not find such an overall assessment or summary check as a completion report for any project/work which we selected.

Further, we recommend that there should be a penalty to the contractor for not completing works on time.

Progress of the CMSMTDP in All Towns of Karnataka

Table 6.3 summarizes the allocation of funds to towns of various sizes in the state, under the CMSMTDP.

Figure 6.4 shows that a majority (44%) of funds in the CMSMTDP, is spent on roads and drains, followed by "others" similar to what we find in the special ₹ 100-crore program.

In addition, we also obtained from the DMA data which enabled us to examine sectoral allocation of funds in the selected cities of our study. Figures 6.5, 6.6, 6.7, 6.8, and 6.9 summarize the sectoral allocation of funds in the five selected cities—Kollegal, Siddapura, Mulki, Bhalki, and Chitradurga in Karnataka.

Table 6.3 Allocation of funds to towns in CMSMTDP

	Numbers	Amount per town (in ₹ crores)	Total amount (in ₹ crores)
District head quarters having CMCs	20	30	600
ULBs in taluka headquarters/nondistrict headquarter CMCs	143	5	715
ULBs in small towns	48	2	96
Total	211	–	1,411

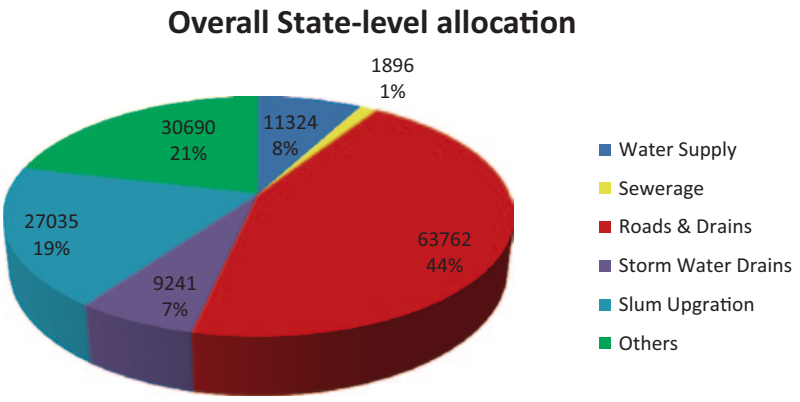


Fig. 6.4 Sectoral allocation of funds under the CMSMTDP, all towns in the state

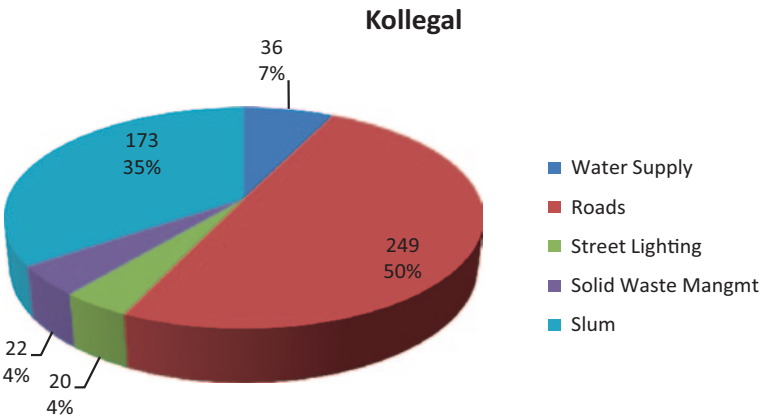


Fig. 6.5 Sectoral allocation of funds under the CMSMTDP, Kollegal

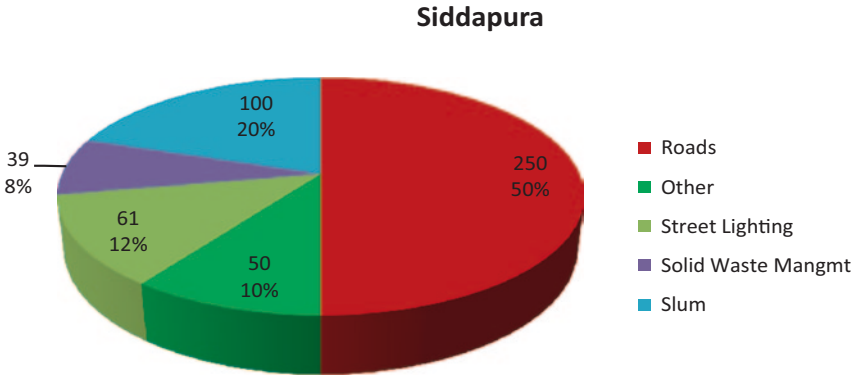


Fig. 6.6 Sectoral allocation of funds under the CMSMTDP, Siddapura

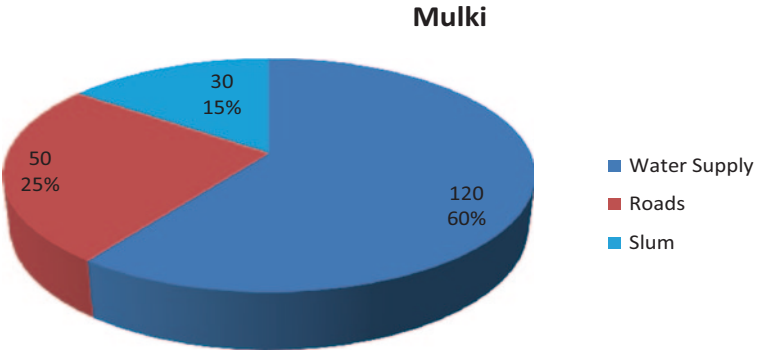


Fig. 6.7 Sectoral allocation of funds under the CMSMTDP, Mulki

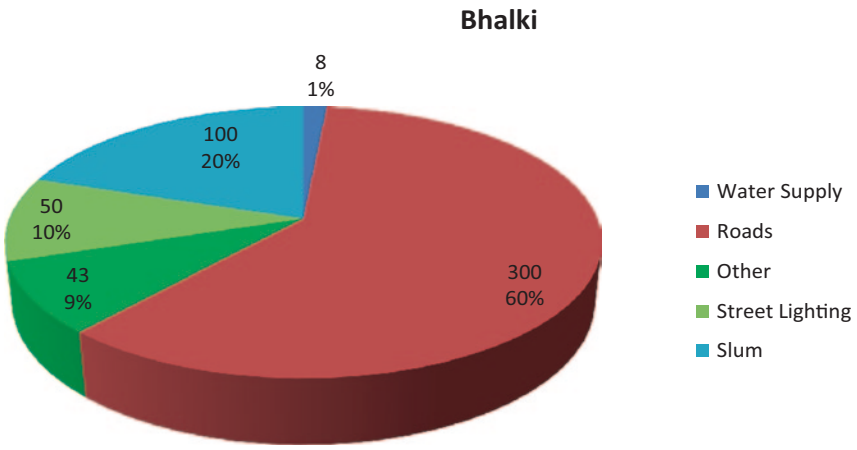


Fig. 6.8 Sectoral allocation of funds under the CMSMTDP, Bhalki

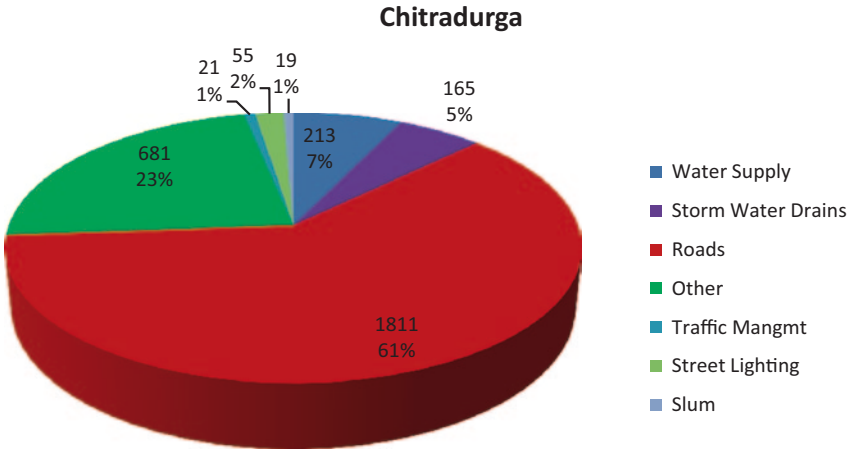


Fig. 6.9 Sectoral allocation of funds under the CMSMTDP, Chitradurga

Figures 6.5, 6.6, 6.7, 6.8, and 6.9 show that in nearly all our selected cities (with the exception of Mulki)—Kollegal, Siddapura, Bhalki, and Chitradurga—50% or more of the CMSMTDP funds were spent on roads, with the other major proportions going towards water supply or slum development. Mulki was an exception in that a majority of CMSMTDP funds there were used for water supply, followed by that on roads and slum development, similar to the other cities. This shows that the need of the hour in most cities is to improve roads and mobility.

Cost and Time Overruns in MNY

We had enough information to determine the extent of cost overruns in the various projects/works which we selected. The cost overrun was calculated as the difference between the estimated cost in the action plan and the approved tender cost.[3] We computed cost and time overruns in the case of four selected works (or projects) under the special ₹ 100-crore program. All the works had cost overruns with the maximum cost overrun (of 8.9%) being in a project of size of ₹ 81 lakhs (the road project discussed above). The least cost overrun (of 2.7%) was in a project of ₹ 10 lakhs value (again a road project). The average cost overrun over all projects was 5%. There was no difference between the cost overrun of a combined road and drain project (which was 4%) and a walkway (3.9%).

We examined time overruns by studying the difference between the due date for completion of work and the actual date of work completion based on the tender agreement. Of the four works we selected, one (the pedestrian walkway project 3, Table 6.2) was completed on time and one was completed ahead of time (a road project—project 4, see Table 6.2). The project with the maximum time overrun was a road work which was supposed to be completed in April but which was completed only in August 2009. The delay was due to pipeline work which was in progress and had to be resumed and completed after the completion of the pipeline work. Interestingly, we found the delay (by a month) in the other project (the first project in Table 6.2, which is a combined road and drain project) was also due to shifting of a pipeline. This is consistent with evidence presented by Singh (2010)[4] who examines causes of time and cost overruns in 894 infrastructure projects in 17 different sectors (most of which were publicly funded and managed projects, with only a few road projects being public–private partnerships, PPPs) in the country and finds that road projects were most likely delayed due to problems with land/property acquisition, shifting of power lines, water lines, sewer lines, and approval of underpasses.

[3] Generally, cost overrun is worked out with reference to project cost (as per the detailed project report (DPR) or the final bid price) and the actual cost. Cost overrun normally follows time overrun and consequent escalation in costs due to delays in implementation. There could also be cost overruns due to revision of the schedule of rates (SRs). In the case of the UIDSSMT in the following section, we also observed cost overruns due to the lack of adherence to mandatory reforms, which does not apply in this case. Further, in a study of this nature, when the ToR (terms of reference) is given, it is assumed that they can be addressed subject to the availability of certain data. Until we got to the field, we did not know that many projects had not attained financial closure and contractors were not paid their final installments, with the result that we were not able to get data on final expenditures; hence, we could not define the cost overrun to be the difference between the estimated cost and actual cost.

[4] Singh, Ram (2010) "Delays and cost overruns in infrastructure projects: Extent, causes and remedies," *Economic and Political Weekly*, 45 (21), May 22: 43–54.

When we compared the estimated cost of a project from the action plan with that of the approved tender cost in the case of CMSMTDP, on average, we found a cost overrun of 2.5% when we examined works completed in all sectors, less than what we found in the special ₹ 100-crore program (where the time overrun was 5%—in the case of all projects—and 6% in the case of road projects). There were indeed works in which the tender costs were lower than the estimated project cost (by about 5.9%) approved as part of the action plan (which was a road work in Bhalki). The maximum cost overrun was 8.9% in a Siddapura road project. Interestingly, this was a project with a 10% time overrun. Given that this is an asphalting project, petroleum is the core input. Since petroleum prices have been continuously rising in line with the global trends, the tender cost was higher than the estimated cost in the action plan. We noted that the action plans for these projects were submitted in July 2010, but were approved only in October. Once the action plan is approved, the city calls for tenders, contractors respond, and the responses have to be assessed by the city before making a final decision after negotiations. The work starts only after the finalization of the negotiation, choice of the contractor and an agreement in place. Hence, these time delays in processes explain cost overruns.

When we examine time overruns, on average, taking into account all projects, there is a 91% time overrun. The maximum time delay of 600% occurred in Mulki in the case of two road projects, where both the projects were delayed by nearly 6 months. Incessant rains, rituals related to a temple (which had to pass via those roads), and land acquisition problems were responsible for these delays. However, there were a number of projects which were completed ahead of schedule. There were a couple of road projects in Bhalki which were completed a month earlier than their expected completion date.

Budget Analysis of Heads of Expenditure in MNY

Since all the ULBs outsource the works to contractors, we could obtain a disaggregated analysis of the budgets only from the contractors who implement the work. We were able to get this information only from contractors whom we were able to contact. Based on information from the contractors to whom the various works were outsourced, we examined expenditure on various heads by them. This is summarized in Table 6.4.[5]

[5] These are not based on ledgers of account or audited financial statements with the contractors, but they are based on approximate percentages provided to us by them. Hence, it is possible to work backward and arrive at expenditure figures. It might be relevant to note the ToR for the ERC read as follows: "..conduct budget analysis of various heads of expenditure, including analysis of process of determining unit cost of various activities under a project…" This applies to all works under the MNY and the UIDSSMT, where contractors were involved.

Table 6.4 Analysis of various heads of expenditure, selected projects, special ₹ 100-crore program, Mysore

Sr. No.	Sector	Name of work	Salaries and wages	Materials
			(% of expenditure)	(% of expenditure)
1	Road and drain	Construction of drain and providing asphalting to Seetharama Rao Road in Ward No. 3	35.38	60.67
2	Road	Improvement of Road Arunodaya ITI College, right side cross road from 11th to 13th cross at Jantha Nagar Ward No. 24	38.95	58.13
3	Walkway	Construction of pedestrian subway at Sayyaji Rao Road—near BATA	19.25	73.15
4	Road	Improvements to Pulikeshi Main Road	27.63	72.26
	Average, all projects		30.3	66.05
	Average, road projects		33	65

We divided the expenditure on the project by the contractor into three parts: salaries and wages, materials, and equipment. On average, materials (or inputs such as cement or steel) constitute nearly two-thirds of expenditure on all projects, with the walkway project spending the most there (73.15%). Typically, we find salaries and wages constitute slightly less than one-third of their expenditure on all projects, with capital equipment (such as tractors or other paraphernalia) accounting for only 4% of the total expenditure. It seems that the walkway project spent the least proportion (less than 20%) on salaries and wages and the most (73.15%) on materials, given that prefabricated structures were used. On the other hand, all road projects spent about 30% of their total expenditure on salaries and wages. On average, the non-road projects (including the combined road and drain project) spent even less on salaries and wages (27%) than those on road projects; hence, there is every reason to believe that these projects were executed in a cost-effective manner.

Based on our analysis (see Table 6.5), on average, taking into all projects under the CMSMTDP, more than half (58%) of the expenditure was on material (such as steel, petroleum, iron, jelly, stones, and so forth).

More than one-fifth of the expenditure (21%) was on equipment such as mixers and tractors. Less than one-fifth (18%) of the contractors' total expenditure on the project was on salaries. This does mean that the contractors do squeeze their resources to execute their project, similar to what we find in the special ₹ 100-crore component of the MNY. The maximum proportion of expenditure spent on salaries was 35% in a work in Siddapura. There was no cost overrun in this project, which means that projects were being implemented in the predetermined way (as proposed in the action plan). The works are also outsourced by cities in a competitive manner, through calling for tenders.

Table 6.5 Budget analysis of various heads of expenditure, CMSMTDP

Town	Work completed	% Expenditure on labor	% Expenditure on materials	% Expenditure on equipment
Siddapura	Construction of compound wall at western side of compost yard in Hosur village Sy.No-205	35	55	10
Siddapura	Construction of steel grill container for collection of plastics in compost yard	20	70	10
Siddapura	Construction of compost pit for collection of biomedical wastes in compost yard	10	25	65
Siddapura	Construction of engineering landfill site in compost yard	10	25	65
Mulki	Improvement of road from Chitrap Kalsanka to Gajani	15	60	25
Bhalki	Improvements and asphalting of road from: (1) Balaji Temple to Baswehshwar Chowk and (2) Dr. Ambedkar Chowk to Base in Bhalki Town	20	60	20
Bhalki	Improvements and asphalting of road from Subash Chowk to Railway Station in Bhalki Town	20	60	20
Bhalki	Improvements of road from Seventh Day School to Railway Gate in Bhalki Town	20	60	20
Bhalki	Improvements of road from Math Mallikarjun House to Saidapurwadi Cross in Bhalki Town	20	60	20
Kollegal	Granular base for Rajiveenagar 1st cross road	19	68	4
Kollegal	Construction of drain on the right side of Rajiveenagar 1st cross road	24	59	9.5
Kollegal	Construction of drain on the left side of Rajiveenagar 1st cross road	24	58	9.5
Kollegal	BT road from RMC to Forest Office	10	70	12
Kollegal	BT road from Lingannapura to Siddappaji temple	12	70	10
Kollegal	BT road from RMC to Agastin colony cross	10	70	12
Average		*17.93*	*58*	*20.8*
Maximum		*35*	*70*	*65*
Minimum		*10*	*25*	*4*

Unit Costs in MNY

Unit costs are the costs incurred in building one unit of the infrastructure (road, streetlight, and so forth). We computed unit costs of completing all projects we studied, comparing them across programs, with a view to understanding their relative cost-effectiveness, given different levels of government are involved. When we discuss unit costs, a few conceptual differences between what we observe and what

we need are in order. What we observe in the city's or service providers' budgets is actual *expenditure* on the selected services, whereas what we are actually interested in is the *cost* of providing them, as pointed out by Chernick and Reschovsky (2004). There are several reasons why we may expect it to be a methodological challenge to separate out costs from expenditures. Expenditures could differ across local governments due to exogenous factors such as topography. The cost of providing water in elevated areas (such as Bangalore, which is 930 meters above sea level) would be higher than that they would be in low-lying areas (see Sridhar and Mathur 2009). Further, the relative dryness or wetness of an area (rainfall) is a determinant of expenditure on various urban services (especially water supply). Finally, the vector of relevant input prices a city is faced with also determines the cost of providing services (for instance, the costs of electricity to pump up water from a low-lying source, relative to the location of the city).

Thus, actual spending (or expenditure) on a public service by a city could be due to a number of different reasons, of which cost is just one. The costs of providing public services are determined by the price of inputs and exogenous factors, such as topography, which aggravate or reduce the costs of providing services, as highlighted above.

Actual *spending* on public services is determined by other factors in addition to costs. Spending on local public goods is determined by their *desired* level, likely to be different for different income groups. See de Bartolome and Ross (2003)[6] for an analytical framework that describes why this would be true. In general, this is also well known from Tiebout (1956)[7]. Specifically, we expect willingness to pay for local public goods such as water to increase with income and/or education.

Further, some local governments that are more efficient spend less for every unit of the public service delivered, when compared to less efficient ones. The size of the local economy could be a factor in determining scale economies for certain services. Other factors determining the efficiency of service provision are the degree of privatization in service delivery. Typically, private provision of services is known to have cut costs in many Indian cities. This is because public recruitment of personnel is expensive, and there is no explicit performance appraisal, making public provision of services inefficient.

Naturally, a big methodological challenge is to separate out that part of *expenditure* attributable to *preferences*, and that because of *costs* (this includes input prices, topography, and inefficiencies). Technical considerations sometimes prevented us from comparing unit costs across projects within the same city and certainly across cities. Thus, while expenditure (or spending) is a function of cost, household preferences, and (in) efficiency, we use the terms cost and expenditure interchangeably here.

[6] De Bartolome, Charles A.M and S.L.Ross. 2003. "Equilibrium with local governments and commuting: income sorting versus income mixing," *Journal of Urban Economics* 54 (2003): 1–20.

[7] Tiebout, Charles. 1956. "A Pure Theory of Local Expenditures," *Journal of Political Economy* 94: 416–424.

For the two road projects we studied in Mysore under the special ₹ 100-crore program, the unit (tender) cost of constructing one square meter of road turned out to be ₹ 697 on average. We noted that the size of the two road projects varied greatly even on the basis of their action plans. One road project's estimated cost was only ₹ 10 lakhs (for improving 1,687 square meters of a road) whereas the other one was ₹ 81 lakhs (for making improvements to 10,400 square meters of road). However, there is no reason to believe that the unit costs would be different within the city (excepting technical specifications). In fact, we expected the unit cost in the larger project to be lower, given scale economies. Interestingly, however, in the larger project of the two (in terms of physical target), the improvements to a road (10,400 square meters) cost more than the average, being ₹ 785 per square meter, whereas the smaller road project involving improvements to a road (for 1,687 square meters of road in ward number 24) cost only ₹ 609 per square meter. This defies the assumption that scale economies exist in large projects. Incidentally, we noted that the one with the higher unit cost (larger project) was also the project which was completed ahead of schedule. It is possible that such efficient projects have a cost premium. There can also be a host of other factors affecting costs and completion timetable. The cost overrun (the difference between the tender cost and the original estimated cost in the action plan) was greater than 8% in this larger project compared with only a 3% overrun in the case of the other road project (which had a lower unit cost but was delayed by 4 months).

We were interested in examining what projects are more cost-effective within the CMSMTDP, understanding that topographical constraints and technical considerations play an important role there when comparing these costs across cities. In general, we found road projects to be less expensive when compared with other projects such as those in solid waste management, with the unit (tender) cost of a road project (per square meter of road completed) being only ₹ 619 when compared with ₹ 57,463 per unit of the work when all projects (street lights and solid waste management) are taken into account. However, in terms of unit cost, the least cost project was not a road project (at ₹ 190 per unit for constructing an engineering landfill site in a compost yard (Siddapura)). The least cost road project in terms of unit cost was a (Kollegal) road improvement project at ₹ 223 (see Table 6.6). While the maximum road project cost only ₹ 1,640 per square meter of road improved or built, the maximum "other" category project cost ₹ 460,000 per kilometer of shifting and erection of electrical poles (in Siddapura).

Table 6.6 Unit costs of road projects under CMSMTDP

Town	Average unit cost (in ₹) per square meter of road	Maximum unit cost (in ₹) per square meter of road	Minimum unit cost (in ₹) per square meter of road	Number of completed road works selected
Siddapura	563.19	774.32	360.42	3
Mulki	270.67	270.67	270.67	1
Chitradurga	1,275.41	1,640.83	909.99	1
Bhalki	608.11	779.63	462.34	4
Kollegal	430.03	606.06	223.21	4
Average, all	*629.48*	*950.21*	*445.33*	*13*

We chose four cities to study works completed under the CMSMTDP—Siddapura, Mulki, Bhalki, Chitradurga, and Kollegal. In our analysis of unit costs, we looked at works completed sector-wise. First, we take the instance of roads. Even here, as in the earlier cases, we choose the approved tender cost as our estimate since if projects have not attained financial closure, the actual expenditure to date will be misleading as a measure of costs. Overall, the unit cost to build a square meter of road under the CMSMTDP (taking into account all cities) is roughly ₹ 619. Table 6.6 summarizes the variations across the various cities in terms of unit cost for completed road works along with various summary statistics.

Understanding that unit costs are determined by a number of considerations including topography (and not just by efficiency), we find that as far as road works are concerned, in terms of average unit cost, Chitradurga is the highest (at ₹ 1,275 per square meter of road and a culvert). The road project involved upgradation of 880 square meters of road and a culvert. The lowest unit cost summarized in Table 6.6 is in Kollegal (₹ 223.21 per square meter of road), where the work involved improvement of 4,480 square meters of road. Thus, here economies of scale seem to have an effect on reducing the unit cost, whereas we found that in the case of the special ₹ 100-crore program, scale economies did not have an impact in reducing the unit cost.

We also compared the CMSMTDP unit costs to those under the special ₹ 100-crore package program. While the average unit cost of the road projects in the special-₹ 100 crore program is ₹ 697 per square meter, the unit cost of the road projects under the CMSMTDP is only ₹ 619 per square meter of road constructed. Given the CMSMTDP is in smaller cities, labor and other inputs could be cheaper. It should also be remembered that the average unit cost for CMSMTDP road projects is based on nearly 15 works completed in the various cities chosen for this study, whereas the unit costs for the ₹ 100-crore program are based on two road works completed in Mysore. However, it should be mentioned that even in the CMSMTDP (as with the ₹ 100-crore program), financial closure was not attained in many projects with the result that the local government was still expecting funds from the state government, and the contractor had completed the work using some part of his own funds. Hence, we decided to use the tender cost (rather than the actual expenditure or the estimated cost from the action plan to determine unit costs).

Overall, between the special ₹ 100-crore program and the CMSMTDP, we found that the special ₹ 100-crore program costs more per unit (₹ 697 per square meter) of roads than the CMSMTDP. We are not making attempts to explain these variations here. It could well be the case that topographical constraints make it more difficult to implement certain projects more than others.

We found that financial closure was not attained in many projects under the ₹ 100-crore program (as with the other programs) with the result that the ULB was still expecting funds from the state government, and the contractor had completed the work using some part of his own funds. Hence, we decided to use the tender cost (rather than the actual expenditure or the estimated cost from the action plan) to determine unit costs.

The above discussion regarding variations in unit costs should be read with caution because technical specifications of different projects/works might vary widely (with some having more foundation depth and so forth). Since we do not have detailed technical information regarding these projects, we are unable to remove their confounding effects on the costs.

Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT)

UIDSSMT was launched on 3 December 2005 as one of the subcomponents of the Government of India's flagship urban renewal program, Jawaharlal Nehru National Urban Renewal Mission (JNNURM). This program is sponsored by the Ministry of Urban Development, Government of India. UIDSSMT subsumed the existing schemes of Integrated Development of Small and Medium Towns (IDSMT) and Accelerated Urban Water Supply Programme (AUWSP). The UIDSSMT scheme is implemented in 30 ULBs in Karnataka. The sectors covered under these ULBs are water supply, sewerage, storm water drains, and roads.

Progress in the UIDSSMT Program in Karnataka

Table 6.7 shows the sector-wise release status of the UIDSSMT scheme as on 31 Aug 2010. Overall, in 26 ULBs one project each was implemented, whereas in the case of Hubli–Dharwad (water supply and roads) and Ramanagar (roads and storm water drain) two projects each were implemented. However, in the case of Davangere and Holenarasipura all the four projects were implemented.

The total cost approved by the state level sanctioning committee (SLSC) for 38 works in 30 ULBs is ₹ 68,249.4 lakhs. As per the guidelines SLSC may sanction additional central grants up to 1.5% as an incentive to the implementing agencies for preparation of the detailed project report (DPR). At the time of writing this chapter,

Table 6.7 Sector wise release status of projects under UIDSSMT in Karnataka as on 31 August 2010 (amounts in lakhs ₹). (Source: Directorate of Municipal Administration—Project Cell, Government of Karnataka)

Projects	Number of works	Cost approved by SLSC	1.5% incentive for DPR	Releases to SLNA (state level nodal agency)			Expenditure
				Central	State	Total	
Water supply	17	41,806.1	627.1	26,690.3	3,312.3	30,002.5	25,034.5
Sewerage	10	7,808.1	117.1	4,496.0	552.6	5,048.6	4,453.3
SWD	3	7,320.3	109.8	3,037.9	370.3	3,408.2	3,608.0
Roads	8	11,314.9	169.7	5,972.5	733.6	6,706.1	4,234.0
Total	*38*	*68,249.4*	*1,023.8*	*40,196.7*	*4,968.7*	*45,165.4*	*37,329.8*

₹ 1,023.8 lakhs had been sanctioned as an incentive to implementing agencies in Karnataka. Sector wise, more priority is given to the water supply in Karnataka and more than 60 % of the total approval cost is allocated for water supply works. However, the total release to SLNA is ₹ 45,165 lakhs and the total utilization of the funds by the implementing agencies is ₹ 37,329.8 lakhs and the percentage of utilization is 82.65 % against release made till 31 Aug 2010.

Cost and Time Overruns in UIDSSMT

Under UIDSSMT, Mulki completed six road works under four packages. We selected all the road works for the study. Table 6.8 shows the summary of road works undertaken in Mulki town panchayat.

The estimated cost as per the action plan for all the works is ₹ 213.9 lakhs. Due to discrepancies in the estimated cost, the ULB was asked to revise further as per the Public works Department revised schedule of rates. The revised action plan was resubmitted and approved. The cost as per the revised estimation is ₹ 252.15 lakhs, taking all works into account. We have calculated the percentage of cost overrun due to delay in the process of executing the works. We found that the average cost overrun between the estimated and revised estimated cost is 15 %. We also calculated the cost overrun between the estimated cost (approved as part of the action plan) and the finally approved tender cost.

We had enough information to determine the extent of time overruns in the various works which we selected. When we examine the time overrun for road works in Mulki we observed the maximum delay in various stages of the work implementation in UIDSSMT projects. We found that there was delay of about a year and 6 months between submission of the action plan and approval of it, the longest of any case we have studied. This, based on our discussions, is due to discrepancies in the estimated cost and the ULB was asked to revise it further. Even after the approval it was further delayed about 9 months to call for the tender.

Table 6.9 shows the time overrun of the road works in Mulki under UIDSSMT, on average, taking into account all works, there is a 300 % time overrun. The maximum time delay of 786 % occurred in the case of upgradations, where both the projects were delayed by nearly 2 years. We found that incessant rains, rituals related to a temple (which had to pass via those roads), and land acquisition problems for which the public created a problem were responsible for these delays.

The average cost overrun between revised estimated cost and tender cost is 11.5 %. However, the total cost overrun from action plan to tender call is around 28.5 %. We noted that once the action plan is approved, the city calls for tenders, contractors respond, and the responses have to be assessed by the city before making a final decision after negotiations. The work starts only after the finalization of the negotiation, choice of the contractor, and an agreement in place. Hence, these time delays in processes explain cost overruns, consistent with what we find with the MNY. There are also other sources of cost overruns in UIDSSMT projects. One

Table 6.8 Summary of road works undertaken in Mulki Town panchayat

Name of work	Estimated cost from action plan (lakh ₹)	Revised estimated cost	Tender cost (lakh ₹)	Cost overrun between estimated and revised cost (%)	Cost overrun between revised estimate and tender cost (%)	Total cost overrun (%)
Upgradation of existing Karnadu Sadashiva Naga long and cross road	99.9	121.4873	130.9754	21.61	7.81	31.11
Upgradation of existing Guttu Road and Beach Road and construction of slab culverts	18	21.34149	24.52137	18.56	14.9	36.23
Upgradation of existing Chitrapu Gajani Road	23.5	27.37947	31.45901	16.51	14.9	33.87
Upgradation of existing Chandra Shanubhagara Kudru Road	18	21.32282	24.49992	18.46	14.9	36.11
Upgradation of existing Chetana Nursing Home to TP boundary Via Kempugudde (from By-Pass)	40.5	46.5712	53.51031	14.99	14.9	32.12
Improvement of Karnadu Padubail Road	14	14.05072	14.26289	0.36	1.51	1.88
Averages	*35.65*	*42.03*	*46.54*	*15.08*	*11.49*	*28.55*
Standard deviation	*32.84*	*40.47*	*43.40*	*7.55*	*5.65*	*13.23*
Maximum	*99.9*	*121.49*	*130.98*	*21.61*	*14.9*	*36.23*
Minimum	*14*	*14.05*	*14.26*	*0.36*	*1.51*	*1.88*

Table 6.9 Time overrun of the road works in Mulki under UIDSSMT

Name of work	Allotted time to complete physical implementation (number of days)	Time overrun during physical implementation (number of days)	% Overrun
Upgradation of existing Karnadu Sadashiva Naga long and cross road	51	65	127.45
Upgradation of existing Guttu Road and Beach Road and construction of slab culverts	51	33	64.71
Upgradation of existing Chitrapu Gajani Road	51	401	786.27
Upgradation of existing Chandra Shanubhagara Kudru Road	51	30	58.82
Upgradation of existing Chetana Nursing Home to TP boundary Via Kempugudde (from bypass)	51	22	43.14
Improvement of Karnadu Padubail Road	51	367	719.61
Averages	*51*	*153*	*300.00*
Standard Deviation	*0*	*179.85*	*352.65*
Maximum	–	*401*	*786.27*
Minimum	–	*22*	*43.14*

is that the standard schedule of rates (SRs) is revised every 6 months. The other reason is that physical and financial progress can halt due to nonconformity to mandatory reforms, as described earlier. The final reason is the tender premiums that result from the process of outsourcing to contractors, as described above.[8]

Table 6.10 summarizes the water supply project in Siddapur under UIDSSMT. The total estimated cost for the civil work is ₹ 251.96 lakhs and the tender cost for the same work is ₹ 373.69 lakhs. The total cost overrun for civil work is 48.3%. It was due to the nonavailability of the ductile iron (DI) pipes that the work was delayed and the cost of the pipes increased. Further, the pipelines were built within the town limit and road cutting was carried out. Hence, extra cost has been incurred to restore the roads.

The estimated cost for the pumping machinery is ₹ 36.75 lakhs and the tender cost is ₹ 41.68 lakhs. The cost overrun is 13.41%. This cost overrun is due to the extra work which was carried out.[9] In the case of distribution work the estimated cost was ₹ 10.9 lakhs, whereas the tender cost was ₹ 10.49. The cost overrun is negative being −3.81%. This is because the contractor wanted to undercut himself and had quoted a rate 3.81% lower than the estimated costs of the project. The contractor might have wished to build an initial reputation for himself by implementing projects more cost-effectively than other, existing large-scale contractors.

[8] The above are based on discussions with Mr. Anjum Parwez, then Commissioner, Municipal Administration.

[9] The extra work involved construction of the reinforced cement concrete (RCC) platform with column frames for transformers substation at jack well.

Table 6.10 Summary of the water supply project in Siddapur under UIDSSMT

Name of work	Estimated cost from action plan (lakh ₹)	Tender cost (lakh ₹)	Total cost overrun (%)
Civil works	251.96	373.69	48.31
Pumping machinery	36.75	41.68	13.41
Distribution network	10.9	10.49	−3.81
Average	*99.87*	*192.09*	*19.32*
Standard deviation	*132.35*	*256.82*	*26.54*
Maximum	*251.96*	*373.69*	*48.31*
Minimum	*10.9*	*10.49*	*−3.81*

Table 6.11 Time overrun of the water supply project in Siddapur under UIDSSMT

Name of work	Allotted time to complete physical implementation (number of days)	Time overrun during physical implementation (number of days)	% Overrun
Civil works	540	462	85.56
Pumping machinery	120	189	157.50
Distribution network	120	0	0.00
Average	*260*	*217*	*81*
Standard deviation	*242*	*232*	*79*

Table 6.11 shows the time overrun of all the three water supply works in Siddapur. On average, taking into account all works, there is an 81% time overrun. The maximum time delay of 157.5% occurred in the case of pumping machinery work, where the work was delayed by nearly 1 year and 3 months. We enquired with relevant officials and found that the agency has carried out extra work other than what was specified in the tender; hence, the agency could not complete the work within the tender period. We also found 86% time overrun in the civil work. The delay was primarily due to the nonavailability of 250 mm diameter and 200 mm diameter DI pipes and while laying the pipeline, a PWD and municipal asphalt road cutting was being carried out; hence, to restore those roads by putting asphalt it took a lot more time than expected. Interestingly, in the case of distribution work, the work was completed within the allotted time.

Budget Analysis of Various Heads of Expenditure in UIDSSMT

Since all the works are outsourced to contractors, we could obtain a disaggregated analysis of the budgets only from the contractors who implement the work. We were able to get this information only from contractors whom we were able to contact. Based on our analysis, on average, taking into all the road works in the Mulki under UIDSSMT, more than half (55%) of the expenditure was on material (such as steel, petroleum, iron, jelly, and so forth). More than one-third expenditure (35%) was on equipment such as mixers, tippers, and tractors. Around 10% of the contractors'

total expenditure on the project was on salaries. This means that contractors are lean and mean. They are not lavish in their payment of salaries to workers and squeeze their resources to execute their project in a cost-effective way.

In the case of the water supply project in Siddapur under UIDSSMT, we found that around three-fourths (75%) of the expenditure was on labor and the remaining one-fourth expenditure (25%) was on equipment such as mixers, tippers, and tractors. This is quite a different composition from what we observe earlier; hence, the projects which we have selected are different with varying degrees of capital and labor intensity, which is desirable.

Since the KUWSDB provided all the material such as polyvinyl chloride pipes (PVC) pipes, valves, and dia pipes the contractor did not incur any expenditure on materials.

Unit Costs in UIDSSMT

We solicited information from the cities regarding the physical targets (kilometers of road or the length and width of the road to be constructed) which were supposed to be achieved against each of the expenditures with the result that we were able to compute unit costs for most works. While physical completion had been attained, financial closure was not attained in many projects with the result that the ULB was still expecting funds from the state government, and the contractor had completed the work using some part of his own funds. Hence, we decided to use the tender cost (rather than the actual expenditure or the estimated cost from the action plan to determine unit costs).

Table 6.12 summarizes the unit cost of the road works in Mulki under UIDSSMT. For the six road works we studied in Mulki under the UIDSSMT, the unit (tender) cost of constructing one square meter of road turned out to be ₹ 703 on average. We

Table 6.12 Unit cost of the road works in Mulki under UIDSSMT

Name of work	Unit cost (in ₹ per square meter)
Upgradation to existing Karnadu Sadashiva Nagar long and cross road	970.2
Upgradation of existing Guttu Road and Beach Road and construction of slab culverts	784.4
Upgradation to existing Chitrapu Gajani Road	582.9
Upgradation to existing Chandra Shanubhagara Kudru Road	816.7
Upgradation of existing Chetana Nursing Home to TP boundary Via Kempugudde (from bypass)	632.8
Improvement of Karnadu Padubail Road	428.3
Averages	*702.6*
Standard deviation	*192.7*
Maximum	*970.2*
Minimum	*428.3*

expected the unit cost in the larger work (for ₹ 99.9 lakhs) to be lower, given scale economies. Interestingly, however, the larger work of the six (in terms of physical target), the upgradation to a road (13,500 square meters) cost more than the average, being ₹ 970 per square meter, whereas the other smaller project involving improvements to a road (for 3,330 square meters of road) cost only ₹ 428 per square meter. Here we should also consider the fact that technical specifications such as width and depth vary from work to work. Even some of the road works represent upgradation and some just improvement. Topography and condition of land might also differ. Therefore, unit cost will vary with all these considerations. For an understanding of the impact of topography on costs of water supply, see Sridhar and Mathur (2009).

We also compared the UIDSSMT unit cost to those under CMSMTDP unit costs and the special ₹ 100-crore package program. While the average unit cost of the road projects under the CMSMTDP is only ₹ 379 per square meter and the unit cost of the road projects in the special ₹ 100-crore program in Mysore City is ₹ 657 per square meter of road constructed. Further, we also chose two road works completed under CMSMTDP in Mulki for the study and we found that the average unit cost is only ₹ 270.67 per square meter, where the work involved improvement of 1,911 square meters of road. Thus, we find the unit costs of constructing a square meter of road in the UIDSSMT to be higher than that of the MNY (both components). However, we are not making attempts to explain these variations here. It could well be the case that topographical constraints make it more difficult to implement certain projects more than others.

Comparisons Across Programs

In this section, we compare all the four programs across a number of parameters required (see Table 6.13). We also compare the various programs on a variety of issues reflecting on possible causes of ineffectiveness in public expenditure and service delivery. Following this, we present some overall conclusions.

Surprisingly, as far as infrastructure programs are concerned, state-run programs such as the MNY (both the special ₹ 100-crore program and the CMSMTDP) have less cost and time overruns than centrally sponsored programs such as the UIDSSMT. In terms of both cost and time overruns, the CMSMTDP is the least, hence the best.

When we examine delays in payment to contractors, we find the UIDSSMT (road work which we studied, no delays with respect to the UIDSSMT water supply project we studied) lags way (at an average of 15 months) behind that of the state-run programs such as the special ₹ 100-crore program and the CMSMTDP, where the average payment delay to contractors is only about 3.7 months with a maximum of 7 months.

Table 6.13 Summary of parameters in various programs studied

Parameter	₹ 100-crore program	CMSMTDP	UIDSSMT
Average cost overruns (in %)	4.86	2.55	25.48
Average time overruns (in %)	75.66	66.67	227.01
ICT	Training for conducting auctions online might help	Intensive training needed	Training given on e-tendering and e-payment for KUWSDB officials and contractors. Training needed for ULB officials
Average delay in payment to contractor	No delays as of our field visit	3.7 months	15 months (road work)
Beneficiary assessment	Positive	Positive	Positive
Sector: Roads	Beneficiary assessment: Positive	Beneficiary assessment: Positive	Beneficiary assessment: Positive
Water supply	Not applicable since no water supply works were selected	Not applicable since no water supply works were selected	Beneficiary assessment: Not very positive
Others (SWM, street lighting, and drains)	Positive	Positive	Positive

Conclusions

1. A comparison of the two programs we have studied yields several important lessons that can aid policy makers in improving the design and implementation of development strategies and expenditure control. The evidence presented in the preceding sections shows that the primary focus of the programs has been on inputs (funds, processes, personnel, and other inputs), and much less on the outputs, outcomes, and effectiveness. Road and water supply projects (infrastructure programs such as the MNY and the UIDSSMT) have performed somewhat better in this regard. In general, civil works tend to define costs and other inputs more clearly than projects that assist the poor or address social issues. But even in civil works, when the criteria for selecting projects are not explicit (such as high -traffic roads and water for poorer areas), it is possible for those with influence to divert the benefits to the less deserving.
2. When the criteria for road selection are known to the public, they are likely to monitor the selection actively. Information asymmetries of this kind tend to subvert the effectiveness of programs and intensify the principal–agent problem. With respect to information asymmetries at the citizen level, we actually found that the citizens were not as ignorant as we expected of them. Contrary to this, we found that they were, in some cases, quite aware of the expected benefits from the implementation of a project (e.g., enhanced water supply due

to the implementation of the water supply project as part of the UIDSSMT in Siddapura).

3. Capacity constraints have surfaced as a barrier to effective implementation in all the programs we have examined. The degree of severity of this problem is not the same in all cases. The smaller ULBs are faced with capacity constraints, whereas the larger ULBs (for instance as with the special ₹ 100-crore program) do not have capacity constraints to the same degree as their smaller counterparts. Even in terms of the use of ICT, we found the smaller ULBs need much training to enable them to carry out their functions and implement projects more effectively when compared with their larger counterparts.

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Any errors that remain are ours.

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