

Capital Improvement Planning Guide

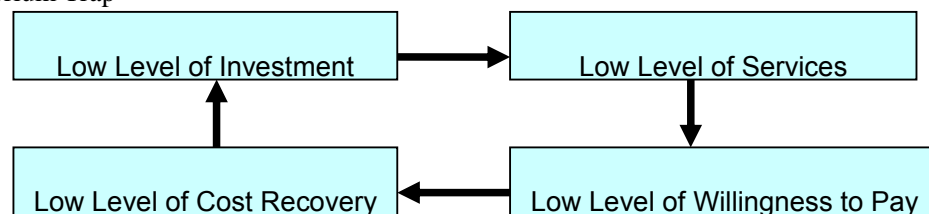
– Dipanjana De

1. The Context

During the last eight years Andhra Pradesh has undertaken series of strategic reforms with the objective of improving civic governance and effective provision of infrastructure and basic amenities to the people. The Andhra Pradesh Vision 2020 document envisages that “By 2020, Andhra Pradesh will have well-planned, economically productive, socially just, environmentally sustainable, culturally vibrant, friendly and safe cities and towns.” This calls for effective management of urban growth so as to have clean, green, comfortable, safe, and livable cities. The state will focus on infrastructure development, environmental management, street lighting, housing, and public transport to all. Civic governments will be participatory, responsive, and people-oriented. This Urban Vision is to be achieved through an integrated approach that blends urban development and infrastructure planning with sound fiscal policy and systems to manage and deliver urban services effectively.

Local Governments are responsible for providing and maintaining basic infrastructure facilities. This important governmental function is not made easier given current demands and local officials’ inherent responsibility to achieve the greatest possible benefit at the least possible cost to the taxpayer. All of the world’s cities are underpinned by a vast infrastructure network of roads, water supply, sewerage, drainage, power supply, flood protection, recreational and other assets.

Improving the management of municipal infrastructure can bring major benefits by ensuring that scarce resources are used in the most cost effective manner, thereby enhancing economic growth, improving living standards and improving environmental sustainability. Many municipalities have traditionally tried to meet infrastructure needs through investment in infrastructure creation, without recognising the long-term life-cycle costs associated with the ongoing operations, maintenance, and renewal of infrastructure. This has led to below-cost tariffs and has undermined the financial position of municipalities, leading to ‘Low Level Equilibrium Trap’



Breaking this trap requires securing private sector participation, accessing capital markets, enhancing financial viability through the development of a Capital Improvement Plan.

The **Capital Improvement Plan (CIP)** is a dynamic document that lists and prioritises needed improvements and expansions of the city’s infrastructure system to maintain adequate service levels to the residents and to accommodate population growth and land development. The plan includes provision for planning and design, development of new facilities, rehabilitation or restoration of existing facilities, acquisition of land for specific development purposes, and the replacement of major facilities/services reflecting the needs and priorities of the city.

Need for Capital Improvement Planning

Capital Improvement Planning is an approach to develop a blueprint for capital expenditures to develop and maintain municipally owned infrastructure assets to:

- (1) Ensure that scarce resources are used in an efficient manner rather than allow capital improvement decisions to be made on an ill-defined, haphazard basis, through prioritisation of the various projects, and providing for the funding and implementation strategy on an annual basis.
- (2) Identify deficiencies in the existing network of roadways, water and sewer systems, and other essential public facilities.
- (3) Determine infrastructure expansion needs to meet future residential and commercial development requirements.
- (4) Select priority projects with input from elected officials, staff and the public.

The **Benefits of Capital Improvement Planning** includes:

- (1) Reversing the historical trend toward declining public investment in important public facilities.
- (2) Eliminating the duplication of project requests.
- (3) Focussed attention on community goals and objectives.
- (4) Allowing for proper programming and project design.
- (5) Improved understanding of service level options and costs.
- (6) Improved decision-making based on the benefits and costs of alternatives.
- (7) Ability to demonstrate responsible investment in infrastructure/framework for the equitable distribution of public improvements.
- (8) Improved knowledge of the timing and magnitude of future investments required to operate, maintain, and renew infrastructure.
- (9) Assurance to tax payers that they will not suddenly be called upon to finance expensive public facility improvements.
- (10) Long term expenditures can be averaged out so that major debt is not incurred all at once.
- (11) Facilitating capital expenditure and revenue estimates and helping to avoid emergency financing methods.
- (12) Improving a municipality's bond ratings and lower interest costs due to prudent fiscal management.
- (13) Being a benchmark of the overall fiscal health of a local government.

In short, CIP helps in rationalised decision making, increased public support for expenditures, and improved management of infrastructure, strategic policy development, and increased market confidence.

1.1 The Capital Improvement Planning Process and the Capital Budget

The capital budget represents the first year of the Capital Improvement Plan. The capital budget is not only a tool for financial planning and control, it is also the most significant instrument to steer city development according to a vision. The primary difference between the capital budget and the CIP is that the former is a legal document which authorises expenditures for specific projects during the ensuing fiscal period. The CIP, on the other hand, includes first year projects as well as future projects, for which financing may not have been secured or legally authorised. The “out-years” of the CIP are not binding and are therefore subject to change.

1.2 Methodology for preparing the report

The methodology used in preparing the report includes:

- (1) A literature search for relevant material which outlines the status of and methodologies used by municipalities;
- (2) Identification of success factors and barriers to implementation of Capital Improvement Planning
- (3) Incorporation of study findings / case studies into a model / methodology for Capital Improvement Planning in urban local bodies in Andhra Pradesh.

2. Evolution of Capital Improvement Planning

Although the conceptual framework of a capital improvement plan² had not undergone major change during the years, there are *six discernible stages* in which its various aspects had come to be reviewed as integral parts of the overall debate of the applicability of the system to governments.

The first stage is the depression years. The then prevailing public philosophy did not favour public borrowing for financing government outlays except during national emergencies such as wars. Sweden was the first country to introduce a capital budget which was to be funded by public borrowing to be used primarily to finance the creation of durable and self-financing assets that would also contribute to expanded net worth equivalent to the amount of borrowing. The capital improvement plan/capital investment plan so launched, found application, in the following years, in other Nordic countries.

The second stage reflects a background that provided an impetus for the application of capital budgets to government transactions. During the thirties, the colonial government of India introduced a capital budget, more to reduce a revenue deficit by shifting some items of expenditures from a current to a capital budget as it was believed that a burgeoning budget deficit did not reflect well on the creditworthiness of the government and the introduction of a dual budget-system would provide an approach that would reduce revenue or current account deficits while providing a rationale for borrowing.

The third stage refers to the growing importance attached to capital budgets as a vehicle of development plans. The countries that were becoming independent since the late forties recognised that the inherited budget system did not properly serve their needs of development. Influenced by the Soviet model of central planning, many developing countries formulated massive five-year plans and capital budgets/development budgets were conceived to be the primary vehicle of economic development.

The fourth stage reflects the growing influence of economists on the more efficient and rational allocation of resources in government and the use of quantitative appraisal techniques, which hitherto were applied to multipurpose river valley projects. During the sixties these techniques established a trend for a more rigorous application of investment appraisal and led to detailed financial planning.

During *the fifth stage, i.e.*, in the early seventies, Sweden found that excessive focus on capital budgets would need to be tempered by a recognition that the overall credibility and creditworthiness of government depended more on the macro-economic policy and less on the net worth of government. While the application of capital budgets for quasi-commercial transactions was necessary, it was not the main basis for the borrowing programme. By the

² It may be noted that most of the available literature, which any way is limited, excludes any discussion of capital plan implementation

late eighties, there was recognition that the management of government finances required radical approaches like the application of accrual accounting.

During this *sixth stage*, followed partly by the experience of Australia, New Zealand, and USA, there was a renewed plea for the introduction of accrual budgeting and accounting. For proper asset maintenance (which was as important as asset creation) there was need for division of outlays into current and capital as a part of day-to-day budget management.

3. Capital Improvement Planning Process

The key elements of effective Capital Improvement Plan are:

- (i) Defined service levels and performance standards linked to strategic objectives;
- (ii) Optimal investment; and
- (iii) A long-term (life-cycle) approach.

Capital Planning activities typically include:

- Consultation with stakeholders and definition of strategic goals;
- Ongoing review of service levels and performance standards;
- Planning for future infrastructure requirements and reviewing the adequacy of current infrastructure, based on growth projections and service levels;
- Continually assessing and reviewing capital improvement options to ensure that optimal operations, maintenance, renewal, acquisition, and disposal decisions are made, taking into account both social and economic objectives;
- Accounting for capital investment in such a way that the true cost of services provided can be calculated, and future investment needs required to maintain the 'service potential' of infrastructures can be determined; and
- Auditing capital investment performance (the practices, procedures, and systems used to make asset management decisions) and continuously monitoring and improving these processes to ensure improvement.

Although capital improvement plans are prepared normally for five years, the size of the municipality's capital investment programme and the typical length of time required to complete investment projects may suggest a plan of seven to ten years. The process consists of **five distinct steps or stages**:

- Inventory of capital assets;
- Development of investment plan;
- Programming investment priorities over time;
- Development of the financing plan; and
- Development of the capital budget.

Step 1: Inventory of Capital Assets

The first step involved in preparation of a Capital Improvement Plan is Inventory of Capital Assets. Although responsibilities vary greatly throughout the world, the most important capital infrastructure assets for which municipalities are responsible are:

- Water and sewer lines and treatment plants;
- Urban road network;
- Storm drainage systems;
- Sanitary landfills or other solid-waste disposal sites;
- Public buildings, sports facilities, educational and social programme facilities, markets and so forth.

Several key characteristics of these facilities should guide the municipality's planning process in determining what types and levels of capital investments will be needed in future years. The first characteristic is the quantitative and qualitative aspects of the level of service; what level of service is provided by the existing infrastructure network, i.e., whether the water system provides direct, household connections to the urban population, whether the roads are kutcha or pucca or whether storm drainage systems may consist of several hundred kilometres of open canals or drainage ditches.

Without regard to the current age and need for reconstruction of some roads, for example, a municipality may consider a capital investment project in urban roads to reduce the number of kilometres of natural surface roads from 250 to 150 by asphalt or concrete paving of 25 kilometres and grading and gravelling of 75 kilometers. Without extending the existing road network, the municipality would be upgrading the quality of the current level of service with possible benefits of reduced fuel consumption, reduced travel time, and increased property values (residential and commercial) along the upgraded roads. In addition, this same municipality might consider, as part of the same capital project or as part of a future, extending the urban road network to recently developed formal or informal settlements which are served presently only by footpaths. Such capital project decisions focus on the current level of service provided by a network and the quality of the service.

Not all capital project decisions involve adding to the level of coverage. If a municipality not only has systematic records of the coverage provided by various infrastructure facilities but also has adequate records of their age (date of construction) and current condition, the capital planning process can also consider the need for replacement or major reconstruction of existing facilities. For example, the percentage cover by direct connection and standpipes illustrated above may not reflect the fact that several sections of the water systems are served by pipes that are more than 50 years old and that may be causing large quantities of water loss and absorbing most of the time for regular water system maintenance crews. Thus, to consider potential capital investments adequately, a municipality also needs to have information on the possible need for replacing existing facilities.

A systematic process for capital investment planning thus should be built around a base of relatively simple information that gives indications of the need for new or replacement infrastructure. Such an information base takes the form of an inventory of all existing infrastructure that specifies:

- Size or quantity (size of building, length of road, and so forth);
- Age (date of construction or last reconstruction);
- Coverage (number of market stalls, percentage of population, etc.); and
- Current condition (could be expert judgment such as “needs replacement within five years”, based on good record keeping about the use of maintenance personnel, one could use the percentage of repair crew's annual time required by one section of a road, waterline, and so forth).

From this inventory, the municipality can then examine the areas of greatest need with respect to existing infrastructure programmes and add potential capital investments to those suggested by the need to provide new services for economic development or social reasons.

Most municipalities in India do not have adequate records of the date of construction, cost of construction, and current condition of existing infrastructure, nor do most municipalities have a programme for regularly examining the quality and the level of service provided by such facilities.

- Knowledge of machinery/equipment owned by the municipality if not readily available can be obtained from:
Machinery and equipment listed on insurance policies, or in fixed asset inventory records, or from inventory listings prepared by a highway or public works department head. Additional information needed can be acquired from the appropriate department head.
- Knowledge about the remaining life of the asset:
The operators, maintenance crew and department head of the machinery and equipment likely have a handle on how much longer the equipment will last and how much it will cost to maintain the equipment. Other sources to determine the remaining life of the equipment could be: the manufacturer's specifications; industry standards (where available); or neighboring municipalities may have some experience with the types of machinery and equipment the municipality uses.
- Cost to replace the machinery and equipment:
This information can be easily obtained by soliciting a couple of estimates from vendors, contacting neighbouring municipalities or researching state and county contracts.
- Assembling the information in an easy to use format is not difficult. Mapping the information in a table can provide a clear picture of current obligations to meet future needs.

Step 2: Development of Investment Plan

Decisions to undertake capital investment are stimulated by six major considerations:

- The degree of urgency of the project, i.e., the need to reconstruct or replace existing facilities in order to maintain existing levels and quality of service;
- The need to upgrade or add to existing facilities in order to improve either the quality of service or coverage;
- The need to undertake new programmes or new services beyond the range of current municipal services, for economic and social reasons;
- Benefits derived from the project;
- Cost and financial impact of the project; and
- Acceptability to the local government

The first step in the development of the capital investment plan, therefore, is to establish goals for the level and quality of service, in terms of measures or indicators such as “extend water coverage to 100% of the urban population by 1995 with 80% direct connections and 20% standpipe or alternative community services.”

From the inventory of existing capital facilities, the planning process thus begins with a comparison of service goals and the extent to which those are presently met. The output of this stage is a list of capital projects required to meet service goals, with at least a rough priority listing of when those projects should be started and completed in order to achieve the specified goals.

Step 3: Programming Investment Priorities over Time

The third stage in the capital investment planning process is to programme the investments required to meet the priority schedule established in the previous stage. This stage requires additional detailed engineering and cost estimation activities, sufficient to establish the approximate costs, and the approximate feasible completion dates for the projects listed in the priority schedule.

While the output of the preceding stage is a list of capital projects, the projects would be more in the nature of broad investment programmes rather than specific projects. That is, for urban roads, the list of projects might include repaving numerous segments of commercial district streets, adding 50 kilometres of new roads to the urban road network over a five year period, and upgrading 75 kilometres of natural surface roads over a three-year period. These broad investment programmes then would have to be subdivided into actual projects that would be designed, financed, and managed as individual projects or as components of a single investment programme for which international financing could be sought.

The next step consists of carrying out studies to establish the technical feasibility of the project and to develop sufficient engineering information on which to base cost calculation. These studies are part of the normal process of defining the scope of an investment project, establishing preliminary engineering designs, and developing preliminary cost estimates. At this stage, fully detailed engineering designs and cost estimates are not useful, because it is not clear how many of the projects might feasibly be undertaken with the next five year planning horizon.

Based on the preliminary cost estimates and the time schedule established by the technical studies, the initial priority list must be revised to establish a preliminary five-year investment plan. This five-year plan establishes the time schedule and costs for all capital investment projects under consideration by the municipality for the next five year period, including an estimate of the annual costs in each of the five years for each of the projects. For those that will not be completed during the five-year planning period, the plan should also include the total additional costs to complete these projects beyond the five-years.

Step 4: Development of the Financing Plan

Although some general financial evaluation may have been made during the third stage so as to preclude the development of a five-year investment plan that is completely beyond the municipality's financial capacity, the fourth stage of the capital investment planning process consists of conducting a detailed financial analysis of the municipalities capacity to undertake the investment programme. Several financial alternatives are considered at this stage:

- Cost recovery elements for individual projects;
- Availability of cost sharing by central or regional levels of government;
- Possibilities for improving the revenue generated by existing, general municipal sources;
- Possibilities for new, general municipal revenue sources; and
- Availability of credit and the possible terms of credit.

Many capital infrastructure projects have the possibility of directly generating revenues to cover either all or part of the investment. For example, extensions to or improvements in the water systems may be recovered through the application of additional fees, or the fee structure may include already explicit provision for the generation of capital investment revenues. If the beneficiaries of the investments include property owners whose property values are enhanced, betterment revenues can be employed to capture some of that value to pay for the

investment. Since the total programme of investments identified as a priority in the five-year programme is likely to exceed any municipality's ability to pay these out of general revenues, every self-sustaining cost recovery option should be explored at this stage.

Under some circumstances partial funding by a regional or central government agency is possible. Urban road networks, for example, include roads that are the urban portion of a national highway or are the endpoints of major connectors between metropolitan areas and rural service centres. Partial funding may be economically justified and may be available from central government to pay for a portion of cost that is attributable to a national or regional economic development investment.

Both existing general municipal revenue sources and possibly new revenue sources also should be examined. Analysis of the collection of efficiency of existing revenues, the extent to which late payments are prosecuted, the adequacy of records system for keeping track of tax-payer obligations, all should be considered to determine the extent to which present revenue sources can be improved. In addition, if there is revenue sources permitted to the municipality which presently is unused, these should be considered for possible input to the financing plan.

Finally, the availability of the credit programmes from a variety of internal and external sources must also be taken into account. Only a very small set of investments can normally be carried out by paying for the full annual costs of the investments out of current revenue sources. To undertake any extensive programme of capital investments will require, under most circumstances, borrowing to spread the costs over a longer period of time. The output of this fourth stage of the capital investment planning process is a general financing plan that shows the programme of capital investments and the mechanisms for paying for these investments over the five year period. It is likely that some reconsideration of priorities will have to take place and a revised capital investment plan developed after considering the full financing implications and the availability of financial alternatives.

Step 5: Development of the Capital Budget

The fifth and final stage of the capital-investment planning process is the development of the actual capital budget. The capital budget can be divided into a three-part budget:

- The projects portion should show all annual construction costs, designs costs, interest costs, and any other costs attributed to each investment project, regardless of the actual financing mechanisms and the time in which payments will actually be made;
- A second part of the capital budget, the annual capital costs, should show only the actual financial outlay for direct payments for construction and/or principal repayment on credit financed projects; this would include all financial outlays from those projects that are part of previous planning cycles (even from those which the 5-year planning horizon has been passed); an alternative has to include only a summary line for the total amortization for previous credit-financed projects rather than a project-by-project statement.
- A third portion of the capital budget, *current account transfers*, should show separate statements of costs to be transferred to the current, operating budget; these would include: design costs, future operation, and maintenance costs, and interest and fees on credit.

The decisions to include interest and fees as a transfer to the current account or as a capital cost depend on the accounting approach followed. Some systems include both interest and principal as capital costs in a consolidated budget statement, whereas other systems consider interest a current cost, and principal a capital cost. Here preference is expressed for carrying interest into the current operating budget as a current, rather than a capital cost. The rationale

