CHAPTER – II
Chapter 2

Literature Review

Before venturing into the study of urban infrastructure projects in the State, a study of the existing best and failure cases in the field of formulation and implementation of some of the urban infrastructure projects in the country and abroad was felt necessary in the context of this research. The review may lead to a few lessons and would help in formulating appropriate framework for the present research. The topic of formulation and implementation although seemed very specific by title, the process particularly in municipalities is very complex unlike private sector. It has become important to assess simultaneously the issues concerning capacity building of project functionaries, resource mobilization and financial status of the Urban Local Bodies, urban reforms that support the urban infrastructure activities. The research therefore would need to address all these issues and ultimately the scope of the research would be widened. Keeping this limitation in mind, the researcher ventured into this challenging area of research.

The industrial revolution posed new problems for management of workers, investments, growing and complex organizations and several complicated projects. Distinctly, there was an urgent need for professional managers and skilled project staff including sound principles( Frank B et.al, 1923). The pattern of economic development in less developed countries and developing countries and financial aid by the rich nations has brought about the growth of techniques in project analysis, i.e. the identification and selection of projects by pre-selected criteria. These techniques are usually based on the efficiency criterion(maximizing the ratio of benefits, in the form of increments to GNP, to costs). It was also observed that these techniques imposed by the bilateral and multilateral donor agencies by academics are far too complicated, time consuming and expensive to be adopted in their entirety by institutions in developing countries. The principle is simple but the application is never easy. Often quantification of benefits and costs of projects was near impossible. Obviously good project design is expensive, although so is bad project selection. It has been stated repeatedly that the lack of well
prepared projects is a basic constraint on development, but pressure for implementation tends to postpone the establishment of the required infrastructure for project planning.

There has always been a "crisis" in planning, and it is likely to continue for this is in its nature. On the one hand, national planning has largely been the prerogative of macro-economists with limited interest in projects, and concrete plans, which require a good deal of planning, have been neglected. On the other hand, where planning has been done at project level, it has generally disregarded the fact that market prices are often misleading (Little I.M.D and J A Mirlees-1974). According to Little and Mirlees "A decision to go ahead with a project may depend not only on an assessment of whether it would be more advantageous to the enterprise than doing nothing but on a comparison with other feasible project. If two or more projects are incompatible for technical reasons then clearly only the best of them should be chosen even though each of them would be better than nothing. In view of the complexity of the present day investment propositions, projects have to be looked at from the social, economic, technical, commercial, financial and organizational point of view. Historically, planning was superimposed from above and administratively separated from operational responsibility. Since objectives, policy and measures are inseparable, a method should be found to diffuse the discipline of planning throughout the entire administrative system. It is suggested that all planning functions be integrated in one single agency or department.

In cities throughout the developing world, as much as 30 to 60 percent of a city's population lives in substandard housing. Despite significant strides made by the International Drinking Water Supply and Sanitation Decade; in 1994, 220 million people still lacked a source of potable water near their homes. (United Nations, 1994). The proportion of urban population covered by sanitation is even smaller with just about 580 million residents covered. It is estimated that more than 90 percent of sewage is discharged directly into rivers without any treatment whatsoever. In the developing world 20-50 percent of the solid waste generated remains uncollected. Two billion people still lack access to electric power. With the passing of 74th CAA at the Central level and
corresponding legislations, amendments ordinances etc. at the state level, decentralization has become the keyword in governance

Bijlani(1987) in his paper explains that the term “infrastructure” has proved difficult to define, especially when one wants a practical, working definition that will justify the inclusion of certain kinds of capital facilities while excluding others. In the United states, it has become customary to adopt an ownership definition by restricting “infrastructure” to publicly owned and financed facilities. This definition is particularly unfortunate for our purpose since it rules out by definition, the choice between public or private ownership of facilities and public or private financing.

Many urban problems are insoluble, not because of their inherent characteristics but because of the inadequate manner in which they have been defined, analysed and how solutions are being sought(Catanese, 1972). The Rakesh Mohan Committee in the India Infrastructure Report has identified the problem size and the resources needed for making a dent in infrastructure development. The total requirement for urban infrastructure development covering the backlog in service provision, new investment and O & M for the next 10 years(2011) is a mammoth Rs. 2,50,000 Crores. Insufficient financial resources with Urban Local Bodies by far remains the most important factor affecting the provision and maintenance of adequate infrastructure in urban areas. Rakesh Mohan committee on infrastructure suggests contracting out of part or whole of the service. The good response evoked by the Andhra Pradesh’s Government decision to privatize the Krishna Water Supply project is indicative of commercial viability of water supply in India.

Although, demand for services and urban infrastructure has increased, the share of municipal authorities in the total national expenditure declined from 8 per cent in 1960-61 to 4.5 per cent in 1977-78. This was estimated to have further declined to 3 per cent in 1987-88(NIUA,1989). The share of municipal authorities in the total revenue raised by the central, state and municipal authorities constituted only 2.8 per cent in 1993-94(NIPFP,1995). The resources raised by municipalities constitute hardly 0.6 per cent of
he national Gross Domestic Product. Accordingly, they still remain “peripheral to the Indian economy.

Most Municipalities are faced with regular and mostly annual transfer of the administrative cadre. These include commissioners, chief officers, engineers and health officers. Most of the technical staff belong to parent departments such as Public Works, Public Health and Engineering, Social Welfare and other sectoral departments. These transfers imply discontinuity of plans, projects and activities, established rapport with the council and routines, are not conducive for sustained development, are rather the outcome of political interference and lobbying.

In order to bridge the gap in the municipal infrastructure, the Ahmedabad Municipal Corporation has reformed the information base, assessment and collection mechanisms of octroi and property tax to minimize under assessment and enhance recovery. This has resulted in 100 percent increase in the revenue proceeds from these two sources. Subsequently, with the support of other stakeholders a corporate plan was prepared to initiate projects to the tune of Rs. 742 Crores. As a next step, municipal bonds were issued to raise Rs 100 crores from primary capital market. These initiatives have lead to a chain of reforms in the asset management, record keeping, financial management, ultimately enabling the corporation to have credit rating and demonstrate its borrowing and repayment capacities. These initiatives have enabled the corporation to take up Raska Water Supply Project, which has upgraded the supply of water in the city to the tune of 135 lpcd. The water supply project was implemented in just 135 days due to emergency requirement of water and failure of monsoon. The approval from the authorities, tendering procedure, appointment of consultant, co-ordination with various agencies and implementation were done without delay. The Ahmedabad Municipal Corporation has forged partnership with slum communities, NGOs and private agencies to transform the quality of life in slums. This is achieved primarily through improving the physical and social infrastructure of the slum. This project has got UNCHS’s Dubai International Award during 1998.
Projects such as ‘clean city partnerships’ for solid waste management, ‘city planning partnerships’ with various institutions have strengthened the capacity of the Corporation.

**Lessons Learnt**

- The experience has shown that the municipalities like any other commercial unit, could access the capital market and resources for efficient delivery of civic services.
- The gap in infrastructure services could be bridged by taking a series of reforms in the areas of accounts, asset and records management, information and revenue mobilization etc.
- Infrastructure gaps could be addressed by augmenting own resources by increasing income from own sources, accessing external sources of funding, professionalisation of the municipality and by adopting public/private partnerships
  Projects could be implemented without delay if managed properly.

The Alandur municipality has developed the project on the partnership model of Build Own Operate and Transfer with assistance from the Tamil Nadu Urban Development Fund (TNUDF) and the Government of Tamil Nadu. Technical consultants for the project are Consulting Engineering Services. In order to minimize construction and design risks, the municipality plans to implement the project through an innovative contractual arrangement. In this arrangement the private operator will: (a) construct the sewer collection system and pumping station through a regular contract; (b) construct and operate the sewage treatment plant on a build-own-operate-transfer (BOOT) basis. A comprehensive document clearly indicating the roles, risks, and responsibilities was developed to invite proposals from potential operators. The estimated cost of the project is Rs. 480 million. TNUDF proposed to fund about Rs. 180 million. The rest of the project cost was proposed to be funded through loans from other financial institutions, internal resources of the municipality, and deposits to be collected through new sewerage connections.
In Karnataka, the medium and small sized towns have become dependent on the state for the provision of infrastructure. With regard to the urban planning and sectoral development planning, plans are often conceived, designed and implemented by the same state level agencies. The standards, norms and specifications of the plans are, however, solely set by these state level agencies on universal basis. It proved that these plans are often found not implementable due to local conditions, left unassessed by the planners, the non availability of assumed local resources, and means to maintain the schemes. (Prasanna, 1992)

The post plague management in Surat has resulted in complete revamping of the existing chaotic administrative setup which was solely responsible for the disaster. The efficient management system adopted now has made the city forerunner among the cleanest city of India. (Guruprasad Mohapatra, 2001). Surat’s experience, in a short span of 18 months, proved that the constraints could be addressed through proper urban management systems, rule of law, management information system, decentralization, participation of people, and fixing accountability. During the pre-plague scenario (1994), the Surat had sewerage coverage of 30% and potable water supply coverage of 43%. Against this background, Surat had literally turned out to be an unhygienic, filthy city, full of dirt and other solid waste which became the prime order of the day. The September 1994 outbreak of plague in Surat left 58 deaths and hundreds of presumptive-seropositive-cases that created widespread panic in city and about 70% of the migrant population fled away. The industry suffered an estimated loss of 1200 crores besides negatively impacting on almost all economic spheres. The most important initiative launched in the post plague was to monitor, regulate and streamline garbage collection and its final disposal. Following innovations were proved effective;

- Integrated Solid waste management, viz. Sewerage, water supply, health care
- Grievance redressal system, litter prevention system, slum up-grdation and rehabilitation, financial commitment:equipment, vehicles, communication
- Involving citizens, creating public awareness
- Administrative charge system, Individual and group responsibility fixed
- Wireless and mobile phone facility for communication
• Creating public awareness for clean city
• Delegation of financial and administrative powers to zonal chief
• 24-48-72 hours and 7 days card system
• Automated complaint lodging and monitoring system
• Micro-planning for sanitation for all 54 sanitary wards
• Zero garbage road for 24 hours
• 60% transportation of solid waste through contractors
• Night cleaning/scrapping/brushing in busy traffic areas and public places
• Self disposal of kitchen waste by Hotels, restaurants, lari, gala etc.
• Retired sweepers engaged for maintenance of public urinals and toilets

Om Prakash Mathur (1999) explains about the existing system of pricing of urban infrastructure and services and concludes that the existing pricing mechanism is not sustainable. United Nations Management Programme (UMP) (Phase-2: 1992-1996) focuses its policy stressing the need for urban infrastructure service delivery approach that provides and maintains adequate infrastructure services responding to effective demand, emphasizing affordability, inter-sectoral linkages, appropriate standards and partnerships between the public, private and community sectors in demand identification and service delivery.

Scot Gibbson (2000): in his paper on Mirzapur the Model City has describe the reforms taken up in Mirzapur city. The Computerization and bringing the properties on the GIS platform. An important finding from the model is that the property-based tax revenue is sufficient to address the most basic urban infrastructure needs. The reforms such as GIS based revenue collection, pricing of services as per the cost and removing the subsidies for new development, restoration of existing infrastructure to functional level, regular maintenance of services would bring the city stand on its own without depending on the external finance for infrastructure projects. The experience would establish the practical link between local municipal revenues and urban infrastructure.
The enforcement of a comprehensive development plan (CDP) has little support from the existing statutory regulations and development on the ground takes place without bothering too much about a CDP. Such conventional town planning is widely known – and criticized – for not providing an answer to existing problems and needs, and is not flexible to changing development needs in the state and in town. Moreover the preparation of CDPs are time-consuming, costly, requires scarce well trained town planners, and is not sufficiently oriented towards implementation (Heinrich, 1993).

The forging of project funding is mostly a matter between the state level agency, state or central Government and the financial institutions. ULBs are too often kept in dark about their supposed financial contribution, the repayment and cost recovery modalities. Cost recovery from the beneficiaries has a low priority and they are informed, at best, during or after implementation and at worst, not at all. This strengthens the widespread belief that everything that comes from Government comes for free (Mengers, 1993).

The financial basis of municipalities have been drastically reduced, with the abolishment of octroi. Octroi contributed sometimes more than 50% of the municipal revenue. The octroi compensation that came instead could not compensate for the earlier income for most municipalities. The reduction in receipts had its impact on the staff strength which had to be reduced accordingly. The financial and staffing position of a few small and medium towns in Karnataka as compared to Bangalore City Corporation is very poor. Besides this, the improvement of financial situation of ULBs by re-assessment of properties and increase of other charges and levies, is most often opposed by various political parties in the council fearing loss of electoral support. Long term financial soundness and ability to provide better services to the public are sacrificed to maintain short-term electoral support. This contributes to the fact that local bodies are pictured as locations where political interference and favoritism flourish, vision is lacking.

It may be noted that the legal, financial and staff position of these ULBs do hardly allow them take up any planning and development works. Without articulation of the
needs through preparation of plans, formulation and implementation of projects, the dependency on state level agency increases further. This is leading to frustration and little hope for self reliance/local self governance. The 74th Constitutional Amendment has made the establishment of District Planning Committees mandatory. Preparation of Town Development Plans which would translate the Master Plans into Economic Development Plans is necessary in the spirit of the constitutional provisions. The Preparation of a State Urban Development Strategy becomes paramount as guidance and framework for the State Urban Development Plan, comprising of District/Town Development Plans (Ministry of Urban Development, 1994)

In the backdrop of economic policies of liberalisation, there is larger scope for public private partnerships and the municipalities have to be lean, facilitative and client sensitive. Such initiatives would also reduce the availability of subsidies for any development. Therefore, the municipalities will have to look more and more into the financial situation of local bodies, the financial viability of projects without relying on the state exchequer and will have to design action plans to improve the financial health of urban local bodies. A local body has to be seen more as public enterprise and less as an administrative entity (Steinberg, Mengeres and Maltha, 1995)

It is pertinent to derive the lessons from the experience of a training approach to build the capacities of the municipal staff for formulating projects in ATI Mysore during 1995-1999. In order to prepare a five year infrastructure investment plan for the municipalities of Udupi and Chikkamagalur in Karnataka as part of the training under the Indian Human Settlements Programme (An Indo-Dutch Capacity Project), the training was conducted in four stages. The first stage was related to course briefing (two to three weeks prior to the second stage), the second stage was a 5 days course on integrated action planning where in the participants were facilitated to analyse strengths and weaknesses of the towns and were able to formulate development objectives for a five year period based on the problems identified. Various steps were followed in the process. In the next stage, a team of resources persons from HUDCO/ATI visited the municipalities to assist them to finalise the objectives, project identification and data
collection. In the fourth stage, another 5 days class-room training was conducted to prepare multi-year investment planning. This ultimately resulted in a document containing proposed projects for approaching financial institutions and Government for funding. Finally, the programme concluded with a presentation and first discussion with concerned state level and financial institutions, such as Department of Municipal Administration, The Karnataka Urban Water Supply and Drainage Board, Slum Clearance Board, Karnataka Urban infrastructure Development and Finance Corporation and HUDCO. In this session, these agencies also suggest technical and financial modalities and also offer support for further detailed project preparation, which may result in project acceptance and funding. Among various lessons learnt from this training approach, following were important;

- A planning horizon of 5 years provided a suitable time frame for planning investments for small to medium sized projects. However, for the purpose of financial analysis of expected revenues, expenditure and repayment, a 10 year period provides a better overview of the trends and viability.

- The proper justification of selected projects and solid linkage to overall development objectives remains a weaker part in IAPs. Participants found it difficult to go beyond area wise needs assessment and to do a city wide analysis of strengths, weaknesses, opportunities and threats.

- The training has indeed succeeded in creating unique environment in which municipal officers and councilors could interact, discuss local problems and needs and prepare an IAP.

- This programme has contributed to motivate them to analyse urban services and financial position over a medium term period and to understand the requirement of infrastructure planning.

- This approach needs to be embedded in a statutory framework for project identification and formulation so that such the project documents prepared as part of the action planning process in four stages would become legal documents for implementation by the municipalities over a medium term period i.e., 5 years.
Bhaskar Rao and Nageswar Rao in their paper titled “Integrated Infrastructure Planning and Programming-IIPP – Five year capital improvement model for Small and Medium Towns” explained the case study of Hassan City and the process of IIPP carried out for Hassan City and culmination of different analytical steps undertaken at different stages with governmental and non-governmental agencies. Three remunerative projects costing Rs. 18.1 million, a few service projects for uplifting the quality of life costing Rs. 12.6 million and a water supply project costing Rs. 35.0 million was programmed for Hassan. It also provides flexibility for continuing with its capital improvement programme even after 5 years of IIPP.

The Greater Noida Industrial Development Authority (GNIDA) has described various steps which have lead to the scientific management of solid waste in Greater Noida. The active participation of the private sector and Community Based Organisations and proper sharing of the tasks among the private sector, Neighbourhood Management Committees and GNIDA Officials are crucial factors for success. While collection of garbage and maintenance of cleanliness of the city is the task of the Private Operator, Monitoring and Supervision is carried out by the Neighbourhood Management Committees and GNIDA Officials. With the success of this model, the GNIDA has decided to extend the process of involvement of private sector and Neighbourhood committees in the operation and maintenance of Urban Infrastructure Services. Another important aspect in the success of the project is a joint and consultative approach among various departments to obtain expert views of all the departments while preparing project documents which ultimately smoothened the implementation process.

The Indore Habitat Improvement Project, which received the 1993 UN World Habitat Award, introduced a concept of ‘slum networking’. The project’s consultant engineer, Mr Himanshu Parik, when analyzing the location of slums in Indore, found that the majority were on or near the natural storm water courses or nullahas. He found that it was possible to exploit the natural fall of the nullahas to lay a sewer network to which the slums could be connected. This proved to be a cost effective solution and gave the majority of slum dwellers the possibility of individual toilets connected to a water borne
The traditional approach would have been prohibitively expensive, with sewers laid under main roads and with long leads to slum areas developed behind the permanent structures fronting the main road. Another innovation in terms of physical infrastructure was to lower the level of roads and footpaths so that they too act as storm water drains during short periods of heavy rain. Conventional engineering practice is to raise the level of roads to keep them dry and minimize damage by heavy vehicles during the monsoon season. Since most of the traffic in slum areas was of light vehicles, which renders such precautions unnecessary.

Amitabh Kundu (1999) in his research paper titled Infrastructure and Basic Amenities in Urban India have analysed in detail the availability and deficiency of infrastructure, comparative assessment of infrastructure status and organizational and financial system for provision of infrastructure and basic amenities in the states and towns. The paper concludes that subsidized amenities provided through the governmental programmes during seventies and eighties have gone to high and middle income colonies. It would be therefore necessary to restructure these programmes and schemes and ensure that the subsidies are made explicit and, through strict stipulations, targeted to vulnerable sections of population.

Jayanth Kumar Dev (2001) presents various innovations in the management of solid waste as taken up by Cuttack Municipal Corporation. The corporation has adopted 8 pronged strategy to restructure the solid waste management system in Cuttack. These include, training and exposure of staff, political and executive functionaries; on-the-job training of sanitary workers; initiating a pilot project of house to house waste collection, which is being extended to 13 other wards; provision and supply of basic equipment; installation of compost plant; and social audit of solid waste management services. The strategy as above has improved SWM significantly and promoted decentralization, optimum collection and resource generation from the activity.

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sustainable. United Nations Management Programme (UMP) (Phase-2: 1992-1996) focuses its policy stressing the need for urban infrastructure service delivery approach that provides and maintains adequate infrastructure services responding to effective demand, emphasizing affordability, inter-sectoral linkages, appropriate standards and partnerships between the public, private and community sectors in demand identification and service delivery.

Greater NOIDA Industrial Development Authority (GNOIDA) is currently developing a Greenfield integrated township and is keen to attract private sector participation (PSP) in infrastructure development and operations and maintenance of the facilities. GNOIDA has invited bids from firms, companies, joint ventures or consortium of companies having adequate works to undertake collection of waste and transportation to treatment/disposal site(s) on contract basis for one year. The area of operations will include parts of urban residential sectors, urban villages, main roads and industrial estates in Greater Noida. GNOIDA had issued an advertisement inviting proposals in February 2000.

In one of the Slum Improvement Projects in Hyderabad funded under the Overseas Development Administration, Michael Slingsby’s (1993) brought out that the improvements in water supply, sanitation, storm water drainage and solid waste collection at the slum level only have limited benefits, if there is not a commensurate improvement in these services at the city level. There are a number of examples of water supply networks being provided within the slums but where the city is not able to increase supplies to meet the increase in demand from slum dwellers. Storm water drains and even sewer networks do not always link into city level systems and community involvement in garbage collection does not mean that the city can meet its obligation to remove garbage from outside the slum areas. The projects were designed to have defined beginning and end. As a result not enough thought was given to post project maintenance and sustainability nor to improving the urban management and financial capacity of the cities, both in terms of maintaining physical improvement, continuing social and health programmes.
The project evaluation studies on the scheme of Integrated Development of Small and Medium Towns conducted by TCPO(1985), All India Institute of Local Self Government(1986), Regional Centre for Environmental Studies(1988), National Institute of Urban Affairs(1990) and Edelman and Banerjee(1994) have brought out the following shortcomings in the formulation and implementation of projects:

- Selection of the town not done based on its growth potential (at times selection was purely on political consideration)
- Various project components selected were not sufficiently tailored to or identified with reference to the dominant functions of the town
- In many cases, survey and feasibility studies were not done for sites and services, shopping complex and low cost sanitation project components
- Mismatch between the scale of land acquisition and actual requirement for housing and infrastructure development.
- Non availability of land for projects and considerable delays in land acquisition due to legal disputes in court(Dharmarajan, 1995)
- Absence of proposals for development of industrial sheds and small scale enterprises as may be best suited to the local economy and the objectives of the schemes for generation of employment
- A lack of suitable institutional mechanism to ensure proper interagency co-ordination at the field level, particularly the involvement of local Governments in contracting and monitoring of the work
- Inadequacy of technically qualified and trained personnel at the town level and inability of the personnel at the state and central agencies to provide necessary support
- Reluctance of the state Governments to give matching share of funds.
- Lack of balance between remunerative and non remunerative project components with a bias towards basic infrastructure facilities.
- Inadequate feedback, evaluation and monitoring mechanisms.
Based on the above evaluation points, it could be concluded that the schemes were unable to create the required infrastructure in an integrated manner in the selected towns nor had a discernible impact in the surrounding hinterland or linked to proper state urbanization strategies. As a result, the desired objective of reducing migration to the big cities was not achieved. However, despite the extensive critique, the Government of India felt that the broader objective of creating infrastructure and other assets has been succeeded in the small and medium towns and the scheme has been continued by the GoI paving the way for much needed boost to the growth of rural and small town economies.

The feasibility report for phase IV of Bangalore Water Supply Project prepared by Tata Engineering Services, proposed a build-own-operate-transfer (BOOT) project to include: raw water intake. The total base cost of these components was estimated at Rs. 8.876 billion at 1997 prices. The report estimated a period of 42 months for implementation of works. The main objective of involvement of the private sector in this initial plan for stage 4 was to transfer the hefty investment responsibility over to them. Though it was not clear whether the private groups would be able to generate resources on better terms and conditions than the BWSSB itself, the arrangement had the expected advantage of project completion without the delays and cost overruns generally associated with public sector agencies. This case study on Bangalore Water Supply Project illustrates the need to shift the focus from augmenting bulk water supply to improving management of existing systems. Private sector participation can help to improve the operational efficiency of existing systems through controlling unaccounted for water and improving billing and collection, customer service, and energy savings. Revenues resulting from these efficiencies can then be used to make capital investments. These operational efficiencies, unlike the large bulk water supply projects, can be initiated with small investments and yet have a big pay off.

Infrastructure Development Corporation (Karnataka) Ltd. has done a study on process evaluation of services in ULBs and has developed Score Card System for assessing the levels of services in ULBs. A scorecard has been developed to quantify the information collected and convert the same into a normative number. The score card has a composite score for the ULB concerned, which is a weighted average of the scores
assigned to the ULB under each of the services. This report sets out the process and background notes for developing an output based indicator scorecard. The aspects relating to data veracity, standard setting, and comparison across ULBs/ groups of ULBs are studied and incorporated in the field study.

Tirupur is India’s largest producer of cotton knitwear, accounting for over three fourths of the country’s knitwear exports. The city lacks adequate water supply and so the industries have turned to groundwater and private tankers for getting assured supply of water. The Municipal area also does not have a sewerage collection and treatment system and an organized drainage system. Moreover, slum areas also lack adequate sanitation facilities. In 1990, in response to these acute urban infrastructure problems, the people of Tirupur and the Tirupur Exporters Association (TEA), asked the Government to improve the basic infrastructure of the area. In 1991, the Tamil Nadu government announced the launch of the Tirupur Area Development Project to address all infrastructural requirements including water supply, sewerage, roads, telecommunications and power. It was decided to set up a special purpose vehicle (SPV) for this with participation of the Tamil Nadu government, TEA and IL&FS. USAID and the World Bank have also committed long term aid for this. In 1994 an SPV called the New Tirupur Area Development Corporation Limited (NTADCL) was set up. Under the Project, facilities would be constructed to provide water supply access to the dyeing and bleaching industries in Tirupur and the domestic consumers in Tirupur Local Planning Area, comprising the Tirupur Municipality, 15 Village Panchayats and 3 Town PANCHAYATS. In addition, water supply is proposed to be provided to five wayside unions which lie enroute on the water transmission system corridor (Raman, 1998).

Florian M. Steinberg (1993) in the paper titled “Why Integration? The Integrated Infrastructure Planning Approach for the Development of Municipal Services” proposes an approach of Integrated Infrastructure Planning (IIP) which is particularly based on experiences in the context of Indonesia”. It entails infrastructure provision which is not sector-specific but integrative. And it attempts to support urban managers with a planning
process for coping with the growing demands for infrastructure and services in the cities of the developing world.

Dr. P S Rana (1999) in the paper titled “Integrated Urban Infrastructure Investment and HUDCO’s Lending Programme” has pointed out the requirement of funds for financing of urban infrastructure services. For financial viability and self-sustainability full cost recovery and conservation of resources is necessary. Therefore to ensure efficient and effective delivery of infrastructure services, direct incentives and motivations through commercial pricing and competition is desirable.

Among the UN Habitat good practices, Luanda Sul in Angola is a trend-setting model for innovative practice. It is based on a self-sustaining urban infrastructure program aimed to valorize public assets through careful land-use management and planning. In close partnership with Government agencies, the private sector and community-based organisations, the population living in temporary settlements and the people displaced by the war are being resettled. The program was initiated in 1995-1996 through a self-financing process and included the construction of 70km of pipes providing drinking water, 23km of drainage, 12 km of power lines, 2,210 houses and adequate shelter for 16,702 people.

The program operates from an Achievement and Management Fund. The resources are mobilised through; (i) the sale of concessions (or land tenure rights) derived from the allocation of public land for private development; (ii) taxes and tariffs perceived on the exchange of goods and services; and (iii) investments made by the private sector. The Government, by issuing guarantees for private investments, provided the basis for the self-financing of the programme. The process involved the identification of suitable land for urban development, the acquisition of the land from landowners by the state, the legislation of the status of the land according to a land-use plan and the mobilisation of capital investment of the private sector. The program involved an initial investment of US$30 million and a subsequent investment of US$14 million. The infrastructure development includes community facilities, schools, commercial establishments, an industrial estate and a hospital.
K P Subramanian (1993) in the paper titled “Integrated Development of Urban Infrastructure: Experience of Tamil Nadu Urban Development Project” explained that the objectives of the project were to increase the supply of legal, environmentally acceptable and affordable private and public services land by a large scale extension of sites and services and slum improvement schemes. Stemming the growth in absolute number of the households living in slums is the main objective. It is found that while the objectives were highly laudable, there has been wide gap between theory and practice, when it is translated on the ground.

It is commonly seen that the solid waste management by many municipalities is not done properly. A Lucknow-based non-governmental organisation (NGO) called Muskan Jyoti Samiti (MJS), has been successfully providing comprehensive SWM services to a part of the city. The Project Components include street cleaning, garbage collection, sorting, transportation, disposal and vermi-composting. It provides these services to about 20,000 households, including 22 slums in peripheral areas of Lucknow city. In March 1999, the MJS started a vermi-composting unit and research centre on a 65-acre site on the city outskirts. Creating intensive awareness among the public and mobilising support of households is the key role in SWM. Once 150 households have signed in a locality, the NGO begins its operation there. Solid waste collection is free for the first two months.

Monthly charges are levied only in the third month, after the residents have seen the benefits of the cleanliness drive. The NGO recovers its operation and management costs from the user charges it collects from residents. The monthly collection rates range from Rs. 10 for a slum dweller to Rs. 25 for a high-income household. The annual collection from households has increased from Rs. 180,000 in 1994-95 to Rs. 4,320,000 in 1998-99. Income from sale of inorganic materials recovered from the collected waste has also increased rapidly from Rs. 45,000 in 1995-96 to Rs. 660,000 in 1998-99. The state government provided the land, capital and equipment for the Vermi-Composting Unit. The State Urban Development Authority gave a grant of Rs. 124,000 for preparation of
vermi-composting beds and pits and also provided 100 cycle trolleys. The Lucknow Urban Development Authority gave four tractor trolleys and 200 handcarts.

Another noteworthy example is participation of community based structures such as neighborhood groups, neighborhood committees and DWCUA groups set-up under the SJSRY (Govt. of India Programme for poverty Alleviation) in solid waste management. The Vijayawada Municipal Corporation (VMC) has used the DWCUA (Development of Women and Children in Urban Areas) groups, for improving sanitation in the city by giving contracts for waste collection and other sanitation services to these groups. The municipality facilitates the formation of these groups comprised of women and children. The Corporation gives these groups the responsibility to sweep, clean, collect and transport garbage from their neighborhood area. The community group is also responsible for cleaning streets and drains, by desilting and removing garbage, in their area. Each community group member is paid Rs. 55 per day towards labour charge and Rs. 5 per day towards a group corpus fund. The corpus fund is used for purchase of uniforms, shoes and implements that are used by the workers.

Mr Krishan Gopal in the paper titled “The IDSMT Programme and development of Integrated Urban Infrastructure – The Punjab Experience” has concluded that the integrations envisaged under the programme proved difficult to achieve.

The evaluation study on Rajasthan Water Supply and Sewerage Project, and the Rural Water Supply and Environmental Sanitation Projects for Maharashtra and Karnataka found that while the various schemes are helping to reduce the deficit in rural water supply and increasing water coverage, they have done little to foster local organizational capacity. Involvement of users in developing, implementing, and operating and maintaining water supply systems has not yet been sufficient to achieve a desirable level of sustainability. Women, because they are the primary water collectors in most rural households, have the most interest in ensuring that the water and sanitation service is designed to match their needs and performs well and they need to be more involved than they have been. The study finds that project designers need to adjust the approach to
service delivery according to existing levels of social capital; special efforts may be necessary to motivate and mobilize community members. Factors such as water committee participation in multiple community, participation in system design and construction, improved beneficiary health, and women’s participation in the water group are all positively related to above-average financial management and cost recovery and should receive special attention during water and sanitation project design.

Ravindra Prasad and Ashok Kumar, Gnaneshwar in their evaluation study of IDSMT Scheme –Findings, have discussed the flaws in implementation of IDSMT scheme and revealed the fact that IDSMT Scheme plays an important role in achieving integrated development of intermediate level towns.

UN Habitat presents a best practice of solid waste management in South Beijing. The system combines several measures including the rational transport of waste to reduce costs and energy use and the use of advanced composting technology to promote the re-use of recyclable organic waste. The Beijing-south waste disposal system has successfully contributed to solving the waste problems of the southern part of Beijing. It has brought about major changes to a situation where waste was piling up without control, decreased the pollution of the environment and improved the health of residents. The capacity of the system is 2000 tons per day serving 2,600,000 people and an area of 60 square km. The system is used as a platform for study tours and visits from other municipalities, planners, schools, non-governmental and professional organisations and practicing professionals to promote environmental awareness and a model for modern waste disposal and re-use.

Since 1980, Foshan government began to implement the comprehensive development projects of urban infrastructure, which laid forerunner on infrastructure construction and emphasis on housing construction. By deeply reforming the administrative system, investment system and price system of urban infrastructure construction which should suit for both international convention and local situation, giving full play to the non government organizations and establishing a multi pattern and steady investment system, they promoted construction of housing and urban
infrastructure during the period from 1980 to 1994 by investing 1.92 billion dollars on infrastructure construction and 0.53 billion on housing construction, founded many infrastructures such as Sakou running water works, Zhen'an sewage disposal works, shizhong rubbish harmless disposal field, Sakou power factory and 12 new residential quarters. These facilities effectively improved urban living surroundings. (UN Habitat-1996)

Where cost-benefit analysis is relied upon for deciding between projects, it tends to be in sectors where quantification is easy. Much rests on the successful estimation of benefits. In discussing project selection under uncertainty, Hirschman A.D(1967) elaborates on what he calls the principle of the “Hiding Hand” and suggests that “mankind always takes-up only such problems as it thinks it can solve. Needless to say in less developed countries hiding difficulties has not always been beneficial. This is why many proponents of social cost-benefit analysis maintain that uncertainty should be reduced to a minimum in project design and carefully estimated. The point that Hirschman makes is that this may be counterproductive, since it may reduce the rate of investment, unduly increase the cost of planning and harm the spirit of enterprise.

Birgegard L E (1975) in his study on project selection process in developing countries indicated that in Kenya, Zambia and Tanzania “a surprisingly limited involvement of ‘politicians’ in micro-planning, including budget preparation” An important reason is that “familiarity with the theory appears to be a decisive means to increase the validity and the reliability of the analysis and to determine what can be achieved and what can not be achieved by applying the cost benefit analysis. The project appraisal technique(Cost-Benefit Analysis) has been refined far beyond the means of practical applicability. Because of disagreements on the usefulness “second best” methods, it has become a “fine art” rather than a practical craft.

In social sector, the challenge in design is to identify projects which are labor intensive, humanly satisfying and equity conducive, and to try to make them profitable to the enterprise and /or the nation rather than to identify projects which are commercially
profitable and then make them labor intensive. All too often, efforts to introduce a “social component” into “productive” projects, intended to make a profit, turns out to be counter-productive. Formal education is only a first prerequisite for competence in project analysis. On-the-job training is vital. There is a need to improve the quality and quantity of their manpower. Training of local staff has not been adequate even in sectors receiving substantial official and commercial credit.

Under any circumstances, political and administrative power tends to negate the division between analysis and decision making. As a rule, planners approve or reject projects on the basis of tacit or explicit dictates by those in power, and the definition and quantification of costs and benefits is the “professional way of doing it”.

According to Little & Mirrles(1974), it is a scheme/plan or part of the scheme for “investing resources which can reasonably be analysed and evaluated as an independent unit. ‘Project’ means a plan or scheme for achieving some objective(s). The whole complex of activities involved in using resources to gain benefits constitute a project. Therefore, the project formulation naturally follows the identification and statement of objective(s) and goal(s). Dr. R L Martino defines a project as “any task which has definable beginning and a definable end and requires expenditure of one or more resources in each of the separate but inter-related and inter-dependent activities, which must be completed to achieve the objectives for which the task(or project) was instituted.

Harold Koontz and Cyrill O’Donell(1959) in his book on “Principles of Management” explain concisely “planning/formulation is to a large extent the job of making things happen that would not otherwise occur”. They go on to state: “planning/formulation is thus an intellectual process, the conscious determination of courses of action, the basing of decisions on purpose, facts, and considered estimates.” At the most basic level, a project is actually the response to a need, the solution to a problem.
Madan Mohan Pant in the publication on ‘Project Evaluation’ (1986) defines that a project is basically an investment activity whose major costs and benefits can be measured (at least theoretically) separately, which lends itself to planning, financing and implementation as a unit. Therefore all projects involve the commitment of resources at a cost with the expectation that benefits will be produced. It is also expected that the benefits will be more valuable than the costs of resources which were used to produce them.

Dr M R Gopalan (1994) in his publication on “An Approach to Project Formulation” defines that the Project formulation is a process by which one obtains a complete picture about the project being undertaken without really arriving at a detailed feasibility study. The information collected through this approach can be used for preliminary evaluation and screening of projects. The structure adopted for project formulation will slightly vary depending upon the types of projects. The factors that have to be considered and weightage to be given to each one of the factors will be different for different projects. At the time of exercise, one should get an indication as to whether the project has high possibility of success or not. This information will help the decision makers in deciding whether to analyse the project further or drop at this stage.

The purpose of undertaking project formulation is to make sure that the project is technologically sound, that it provides a reasonable economic and, where appropriate, financial return; that its objectives can not be achieved in some less costly way and that it fits in with the overall economic objectives of the sponsoring organisation. The relative importance of these aspects varies considerably according to the type of project involved and they may overlap with the result that a particular topic may be considered from several points of view. All projects should be evaluated, so far as possible, by applying the same principles. Otherwise inconsistent decisions are certain to be made.

The Project Formulation exercise is done with a view to
1. Understand the various dimensions of the project from a very broad angle
2. Facilitate the project authorities to take a decision as to whether it is going to be beneficial for the organisation to conduct a detailed feasibility study or not.
Otherwise the project idea may be dropped at this stage without proceeding or probing any further.

3 Identify the deficiencies and gaps in the formulation and take remedial measures, if possible.

A well formulated project is the one which presents a very unbiased picture of the project idea in more clear-cut terms with regard to all the above factors. The project authorities should use the information generated through the formulation exercise to identify the deficiencies and gaps in the formulation and take remedial measures ahead of time. The task obviously requires experts with a variety of talent working together particularly engineers, architects, sociologists, economists, together with such other specialists as required. Project formulation, therefore, has to be a team effort where each member of the team brings to bear on the project idea his own expertise and helps in evaluating the strong and weak points of the project. It is a total approach towards the development of a project idea into an investment proposition wherein all the aspects of the project are carefully evaluated and developed.

Pre-investment study and investment decision in any project whether in the government or a private industry have become the most important functions. It is essential to examine the most critical aspects of the project before making commitments on investment. Thus, it is worth spending a small amount of money on an exercise called pre-investment study. This cost may vary depending on the magnitude of the project. However, during this process, based on the analytical study of the data and other information collected, enables the project sponsoring organization to stop further expenditure at any stage of investigation when the data indicate unfavorable trends. Today’s projects especially in the urban development sector are focused on achieving specific social & economic development objectives. Although, problems galore in all types of projects, it is now increasingly noticed that development projects generated by the local governments, public agencies and related departments have been faced with little or no clear output in terms of quality and quantity.
The accomplishment of desired or set objectives in any project is dependent on several factors. Non-fulfillment of the requirements of such factors have resulted in project failures, ultimately resulting in time and cost over runs. In government, the evolution of projects stems from the broad policies and programmes launched by the central and state governments from time to time. For example, a policy of preventing overgrowth of bigger cities resulted into a new programme called Development of Small and Medium Towns, and to realise the policy and programme objectives, town level projects were formulated and implemented. Similarly, under the national housing & habitat policy, different housing programmes were created with a set of broad guidelines and to implement these programmes, housing projects were formulated and implemented by the concerned authorities in the project towns. Similar is the procedure in almost all the developmental projects initiated by different ULBs, departments of government or public agencies. Barring a few small projects, formulation exercise has not been adequately carried out either due to lack of know-how and skills or may be due to the little importance attached to this basic stage of project management.

Project formulation exercise should precede all other steps since it is the first and critical step in the selection of any project. It is evident from the experiences that in several of the urban infrastructure and housing projects implemented by the public agencies, problems of not meeting the required levels of results during and after the implementation of the projects only highlight the in-effective project formulation.

Preparation of detailed feasibility report should be undertaken only when there are evidence of number of positive indicators to go for the project. During the pre-investment study, technical assessment, economic appraisal, input analysis, project design, cost analysis are done to assess whether the inputs that are required for the project implementation are available. Such inputs are identified & quantified so that it becomes an important input for the cost-benefit analysis of the project. The project has also to be assessed from the point of view of social benefits. Most of the urban development projects are aimed to achieve direct and indirect social benefits. For example, a water supply project for a town has direct benefits such as supplying the required quantity of
safe water to the house-holds. At the same time, it has indirect benefits such as reducing the water borne diseases, health improvement of the people, increased work out-put because of improved health etc.

Therefore, a project may have to be assessed for the positive & negative benefits as well as short-term & Long-term benefits and effects. Therefore, during pre-investment assessment of a project, the project is evaluated for all the consequences. Normally, an approach to project formulation involves various stages in the order of importance namely project idea, reasons for going in for a new project, need/demand for the project, project technology, project inputs, project location, project cost, project economics, time frame, social benefits, environmental issues etc.

As the urban population continues to grow, investments in urban infrastructure for the provision of services such as roads, water supply and sewerage, urban transportation and the like will need to be much higher than they have been in the past. Recent studies also suggest that large productivity gains can be obtained, if regulatory impediments to land assembly, development and construction in urban areas are removed

A review of the Ministry of Programme Implementation has shown that about 70 per cent of project time or cost overruns are due to unrealistic assumptions at the project Formulation stage. It is therefore necessary to pay attention to this, often overlooked, but vital aspect of project formulation.

In the CPHEEO Manuals on water Supply and Sewage explain various stages for Project Formulation. All projects have to undergo through different processes of preparation from the conceptual stage to completion stage. These processes are;

I. Pre-investment planning
   • Identification of Project
   • Preparation of Project
II. Appraisal
III. Controlling and Monitoring
IV. Operation and Maintenance
V. Evaluation and feedback for correction
Absence of qualified persons to deal with key issues of formulation, implementation and O & M is the result of inadequate project efficiency. HUDCO has taken a number of initiatives towards promoting private involvement in urban infrastructure development. The initiatives include water supply schemes, project in the transport sector, project in solid waste management etc. In addition many other institutions such as IL & FS, ICICI, HDFC, IDFC are now playing significant role in making projects a success.

Canning and Bennathan estimate social rates of return to electricity-generating capacity and paved roads, relative to the return on general capital, by examining the effect on aggregate output and comparing that effect with the costs of construction. They find that both types of infrastructure capital are highly complementary with other physical capital and human capital, but have rapidly diminishing returns if increased in isolation. The complementarities on the one hand, and diminishing returns on the other, point to the existence of an optimal mix of capital inputs, making it very easy for a country to have too much - or too little - infrastructure. For policy purposes, Canning and Bennathan compare the rate of return for investing in infrastructure with the estimated rate of return to capital.

The World Bank undertakes standard project evaluations as a matter of course, the deeper focus on the long term impacts is a first for the Bank. “With over 100 researchers in its Development Economics Department (DEC), and access to operational experience, few other organizations can match the Bank’s capacity to undertake such evaluations,” “An impact evaluation differs from a traditional evaluation as it seeks to assess, in a comprehensive way, how a project affects the lives of people in a targeted group.” A standard evaluation assesses whether or not, or to what extent, a program has reached its intended objective, while an impact evaluation is aimed at evaluating the broader development impact of the project on the population.
In Karnataka, the Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) has been implementing major urban infrastructure projects in Karnataka. Major projects among them are:

a) Karnataka Urban Infrastructure Development Project (ADB) Total Cost: US$112 million
b) Karnataka Urban Development & Coastal Environmental Management Project (ADB). Total Project Cost: US$251.4 million
c) Karnataka Water & Urban Management Project (World Bank)
d) Municipal Capacity Building (World Bank)
e) Mega City Scheme
f) Computerization of City Corporations

A few ADB assisted projects in Mysore city will be assessed as part of this research.

It is seen from the above reviews that although efforts have been made to manage the urban infrastructure services by various agencies including ULBs, the ULBs and other concerned agencies are finding a difficult situation to keep pace with the rapid urban development and demand for the urban services.

The review of some of the projects in ULBs reveals that the formulation of projects by various agencies and urban local bodies is not seen as a discipline and integral part of their functions but is viewed more in terms of "as and when required basis." The Urban Local Bodies need to develop a full-fledged system in the form of a formulation cell in the ULBs which could take care of formulation and implementation on continuous basis.

There are projects which have been formulated and implemented with success and also there are projects implemented with partial accomplishment of objectives. The researcher has gone in depth to review the existing literature on project formulation and the case studies of projects implemented and those under implementation across the State, country and in other countries through internet. Although, there are few studies on evaluation of projects, but they all provide only limited details on formulation. From the literature review, the researcher did not find any specific studies done earlier on the topic of Innovative approach to formulation and implementation of Urban Infrastructure projects in Karnataka.
In this background, the researcher undertook to study various issues and components such as social, technical, managerial, environmental, financial and legal etc., and their innovativeness in the formulation of projects in ULBs. The researcher found it interesting to do research with the assumption that the study would bring out policy recommendations based on the analysis of facts obtained from the field.

Many innovative lessons are learnt from the review of good practices/experiences particularly dealing with Integrated Action planning in Udupi and Chikkamagalur, Multi-year investment planning in Hassan, Solid Waste Management in cities of Greater Noida, Surat, Ahmedabad, Luknow, Alandur etc., innovations adopted in Slum networking projects in Indore, Ahmedabad in Gujarat, Tirupur project and various private sector participation models in urban infrastructure projects in various cities, integrated development of small and medium towns in India have provided a basis and benchmark for evolving the research framework for the current research. Based on the review, following innovative points, road map for the research and a scientific evaluation model for assessment of projects could be evolved;
Deriving Innovative Formulation Components of Urban Infrastructure Projects in General from the Review

1. Collection of Data/Information
2. Review of the Existing Projects
3. Assessing the economic Base of the Municipality
4. Analysis of Municipal Services
5. Additional Resources Mobilisation
6. Defining Objectives
7. Identification and Criteria for selection of project
8. Analysis of Developmental Issues
9. Cost Estimates and Cost Benefit Analysis
10. Agencies Involved in Implementation: Municipality/Private/NGO/Community: Roles and Responsibilities
11. Funding Mechanism
12. Technical Appraisal
13. Financial Appraisal
14. Social Appraisal
15. Legal and Environmental Appraisal
16. Feasibility Analysis of Projects
17. Deciding the Project
18. Implementation Schedule
19. Monitoring of projects from beginning to operation and maintenance of projects continuous basis
20. Operation and maintenance of projects continuous basis
21. Project Evaluation
Deriving Innovative Points from the Review of Good Practices and Literature

Solid Waste Management Project

- Micro-planning: For Garbage Collection at the ward level
- Participation of RWAs in planning
- Private Sector Participation in Collection, transportation and disposal
- Revamping of Administrative and management System to cope with increasing demands

- Harnessing income through manure production and recycling
- Adopting scientific techniques for production of manure
- Modernizing the existing system of storage and transportation
- Eliminate Manhandling of waste and open transportation vehicles

- Reduce the Quantum of Waste going to landfill by recycling and manure generation
- Safe waste disposal mechanism
- Adopting efficient complaints redressal system
- Adopting technology and equipments to suit the town

- Integrating Cost benefit analysis to achieve the efficient system
- Monitoring and supervision: Staffing, Pro-active Detection of Problems, cleaning, schedule, Who? Compliance by the officials, compliance by the NGOs/RWAs/Rag pickers/PKs etc
- Decentralisation of powers to the wards/zones for better management of wastes

- Awareness building and skill upgradation of Sanitary workers including the NGOs/RWAs by actual practice in the field
- Better Communication through Mobiles/Wireless etc.
Some Points that lead to Failure of Urban Infrastructure Projects

- Project Components not tailored to the requirements of the towns
- Inadequate pre-assessment of the services and demands
- Absence of Pre-project Planning Modalities
- Absence of Demand survey
- Absence of Feasibility Study
- Improper acquisition of land for the projects
- Delays due to land Litigations in the court
- Absence of Co-ordination among the implementing
- Lack of Institutional Mechanism
- Inadequacy of qualified and trained personnel in the municipalities
- Inadequate recovery and income generation from the projects
- Absence of integration of various projects and programmes
- Delays due to Release of funds by the state
- Inadequate attention to poor cross section of the society
- Improper execution of works: Poor performance, standards, delays etc.
- Inadequate supervision of the contractor and his execution
- Increased overhead costs and revision of estimates
- Absence of documentation of the good/bad practices of the projects
Road Map for the Research

Methodology:
- case study method
- Tools
- Questionnaires/checklists
- Participatory methods
- Charts
- Focussed discussion groups

Evolving assessment criteria based on the Review of good practices and literature and certain project parameters such as objectives, guidelines etc.

Assessment of Existing Process of formulation of projects in the Selected Towns

Identifying the important issues including the negative and positive aspects based on the assessment

Analysing the issues identified, find any innovations if adopted and suggest possible innovations, drawing conclusions and recommendations

Issues that have linkages and relevance such as resource mobilization, reforms, training/capacity building of urban local bodies will also be assessed as they are considered important from the point of formulation

Considering the wide scope for the research, the researcher would like to limit the study to evaluate a few existing projects and derive the innovative parameters adopted during the formulation and implementation of projects. It would also be necessary to assess the drawbacks of the projects that lead to non-achievement of the desired output. To do this a systematic approach to evaluation is necessary. The researcher therefore has developed the following scientific evaluation model as the base for undertaking evaluation of individual projects in the cities. It is likely that all or a few of the parameters might be applicable to the projects depending on the type of project. But to a large extent, all the parameters would be taken up during the evaluation study.
Developing Scientific Evaluation Model/Parameters for the Research

Project Concept and Objectives of the project

Social Survey  
Demand survey of the requirement  
Engineering Survey

Preparation of Project

Role of Government  
Role of ULB  
Role of State level agency  
Role of Consultant  
Role of Contractor  
Role of Community

Appraisal
- Technical Appraisal to determine whether the technical parameters are soundly conceived, realistic and technically feasible.
- Financial Appraisal to determine whether the financial costs and returns are properly estimated and whether the project is financially viable.
- Institutional Appraisal to determine whether the implementing agencies are capable for effective implementation, monitoring, and evaluation of the scheme.
- Environmental appraisal to see any detrimental environmental impacts and how to minimise the impacts.

Technical Appraisal
- Feasibility
- Specifications
- Technology options
- Quality and durability
- Standards
- Designs etc

Financial Appraisal
1. Loans/Grants
2. Own Sources
3. Subsidies
4. Capital investment
5. O&M investment
6. Cost-Benefit analysis
7. Cost Recovery Mechanism
8. Repayment of Loans

Legal Appraisal
- Legal documentation

Social Appraisal
- Social cost and benefits, target group

Project Execution
- Tendering
- Contractor
- Schedule
- Target
- Procurement of materials/equipment
- Performance
- Payments
- Likely hurdles
- Scope etc

Monitoring and supervision
- Progress reports
- Site Inspection
- Cost and Time Control
- Deviations
- Completion Reports

Project Evaluation
Documentation
Project Study
Project performance
The evaluation model derived above is comprehensive as it comprises various stages of project development and implementation.

1. The first stage i.e. Project Concept and objectives need to be evaluated to find out whether the project was conceived well and the objectives were clearly defined.
2. Social survey: Whether the social survey was done to assess the benefits and disadvantages of the project to the society and target group. Have the reactions of the society were taken into account while formulation.
3. Demand Survey: Was the demand for the project assessed by conducting a survey on the internal and external customers.
4. Engineering survey: To assess whether the engineering survey was sound and adequate.
5. To assess the role of various stakeholders in the projects and to examine whether the responsibilities assigned were clear. Also to assess whether they all have performed their roles and responsibilities.
6. To study the appraisal mechanism of project: To assess whether the technical, institutional, financial, legal, environmental and social appraisal have been carried out and find out the innovative lessons and drawbacks.
7. To assess the project execution and hurdles faced if any and how the hurdles are overcome during the execution.
8. How was the monitoring and supervision done to maintain the performance standards of the project.
9. Has the project achieved its objectives?. Was project yielded desired performance?. Whether the post evaluation done?.

These are the essential parameters for scientific assessment of the projects in the research study. Each project under the study would be assessed as per the parameters of this evaluation model.