ON URBAN INFRASTRUCTURE DEVELOPMENT

ABHAY PETHE

DEPARTMENT OF ECONOMICS
UNIVERSITY OF MUMBAI

Dr. Vibhooti Shukla Unit in Urban Economics & Regional Development

WORKING PAPER NO. 7

ON URBAN INFRASTRUCTURE DEVELOPMENT

Abhay Pethe*

ABSTRACT

It is incontrovertible that good infrastructure is central to all economic activity. It facilitates efficiency in key economic services, improves the economy's competitiveness, and generates high productivity and supports strong economic growth. The paper discusses the issues and approaches of financing urban infrastructure, specifically touching upon public-private partnerships and joint efforts by ULBs and financial institutions including commercial banks, pooled fund and Municipal bonds. Further, the paper emphasizes the significance and suggests ways of improving internal resource mobilisation by the ULBs. Finally the paper addresses issues specific to Water and Power sectors. The paper was prepared as an input to MDR.

** Abhay Pethe, is Professor of Urban Economics and Regional Development, Vibhooti Shukla Chair, Department of Economics, University of Mumbai*

ON URBAN INFRASTRUCTURE DEVELOPMENT

Abhay Pethe

I. Introduction

It is incontrovertible that good infrastructure is central to all economic activity. It facilitates efficiency in key economic services, improves the economy's competitiveness, and generates high productivity and supports strong economic growth. Concomitantly, poor infrastructure can significantly impede economic growth and be a substantial drain on the economy's resources. While the infrastructure situation in the entire country is problematic, for the purposes of this paper we will concentrate largely on the urban scenario in Maharashtra.

The paper is divided in to five sections in all including the introduction. The second section provides a backdrop that contextualise the issues to be discussed in the paper. The third section gets into the issues and approaches. These include policy as well as institutional initiatives that need to be forthcoming. Section four looks at sectors, specifically water and power. The fifth and final section concludes.

II. Backdrop – The Context

Given the very characteristics of the relevant projects, infrastructure services are often monopolistic in nature. Investments in this sector are typically bulky, with high up-front costs and long payback periods. Compared to other projects, the infrastructure sector generates large positive and negative externalities. On account of this unique characteristic, each infrastructure project has these additional costs and benefits, which are not easily translated in the traditional levies that users pay for these services. Consequently infrastructure services have been traditionally produced and provided by the public sector in most of the countries.

Kick-starting infrastructure projects at the national and state levels are the priority of policy makers today. With state funding becoming increasingly difficult combined with

huge lags in crucial investments in infrastructure attempts are being made to 'commercialise' this hitherto heavily subsidised government dominated sector. The onset of rapid reforms since 1991, led to considerable activity in terms of projects, policies, regulation and foreign collaboration particularly in areas of power, ports, roads and telecom.

The state of the Indian infrastructure and its massive fund requirements have been clearly elucidated (see Rakesh Mohan Committee Report, and Indian Infrastructure Report). The report had estimated annual requirements of funds for infrastructure at $ 26 bn during 1996-2001 and higher at $ 43 bn during 2002-2006. The report had further added that about 15% of the investment could be financed externally and 85% had to be domestically raised. An important reason for raising money domestically is because most of these projects earn revenues in local currency and hence in the long run it would be difficult to finance them out of foreign savings.

Having briefly underlined the magnitude of the problem of urban infrastructure let us turn to some of the legislative initiatives that have been undertaken and which provide the parametric framework for our discussion. The availability of urban infrastructure whether drinking water, sewerage disposal, solid waste management or roads to name a few essential services leaves a lot to be desired. Data shows that while 20% of urban India does not have access to safe drinking water, almost 72% is not covered by any sewerage (IIR, 2001). It can hardly be overemphasized that the need for 'urban infrastructure', is assuming alarming proportions and needs *urgent* attention.

All this is putting tremendous burden on the ULBs who are constitutionally mandated to provide many of the infrastructure services and amenities. The situation has been further worsened by the transfer of additional responsibilities to the third tier of government (ULBs) as a consequence of the 74th Constitutional Amendment Act (CAA). Whilst this in itself is welcome in the context of the attempt to usher in an era of decentralised model of development, it also puts unbearable fiscal stress on the ULBs. One of the major consequences of the economic regimen of the last decade has been the more than commensurate reduction in resource handouts to sub-national

governments. The third tier of government, comprising the (rural and urban) local bodies, has been hit the hardest.

The last dozen years or so have set the tone for paradigm shift in the matter of rules of the game vis-à-vis policy design in the Indian economy. There is an inescapable necessity to refashion the older institutions that parameterise the macro-policy-environment. In doing so – especially for a developing country like India – the greatest onus is on all levels of governments. They need to integrate incentive compatible mechanisms in their institutional make up. Also, the governance structure has to move towards a decentralised set up from the heavily loaded centric form.

The organs of the state rather than seeing themselves as rulers of the polity must transform themselves into equal partners with other stakeholders in the emerging civil society. Civil society concerns have been around for several centuries now. As an item on the economic and political agenda it has staged a dramatic resurgence in the late twentieth century. It has been used by the social scientists of the West as well as the East, but with varying connotations. From the point of view of relevance to us, it is better to refer to civil society as a combination of state and non-state initiatives (in a participatory mode) for reorganisation and development of social, political and economic life, with the modern sovereign state serving as a pivot. The idea has to encompass all levels of government in the vein of political decentralisation and has to be comprehensively participative in its execution covering the NGOs, and other formal and non-formal agents/players/institutions in the economy.

III. Financing of Urban Infrastructure – Approaches and Issues

Having established the incontrovertible fact of dearth of infrastructure and hence the need to raise resources to finance such infrastructure, we must now address the approaches and instruments for doing so. As far as the approaches go, there are at least three. One, the private sector players should be involved, in the financing and execution of the projects; two, the financial products have to be created to raise such resources with the synergy generated by the co operative efforts of ULBs and different financial institutions. The third approach has to do with the alternative ways of raising

resources internally, by putting the house in order. In particular this will involve the rationalization of user charges especially the property tax.

The institutional refashioning will involve the RBI Scheduled Commercial Banks (SCBs) and the Development Financial Institutions (DFIs). The RBI will have to categorize and explicitly recognise the investment in this sector and mandate (with incentives) that the SCBs take a greater exposure to this sector. The DFIs are in the mode of converting themselves into universal banks. They will have to be given concessions in terms of SLR and (redefined) priority sector lending so that they bring their expertise in project finance and become major players in the arena. The ULBs will have to start to collect and report their accounts in a more transparent and uniform way. This will enable the process of rating them from the point of view of the ULBs raising debt. The different governments involved (Central, State and Local) will have to have a clearly demarcated roles, functions and jurisdictions. This is particularly important in case of parastatals like the MJP and MMRDA. This is essential to avoid confusion arising out of functional and power overlap. Let us now turn to some of these issues.

III.A Public Private Partnerships

In line with global trends, Indian infrastructure scenario too, is witnessing the changing role of government from it's traditional role as a 'provider of services to a 'Facilitator' of services by ensuring that infrastructure services are actually delivered in a desirable manner. However there are yawning gaps in the demand/supply equation of each of these services. For instance, in the power sector, shortages in the peak power capacity and energy in the last five years have been estimated around 20% and 8% respectively. Despite the launching of the much-hyped guarantees of rate of return and fast track projects, very few projects actually reached financial closure. There has been little progress in the road sector despite a national road policy, 100% FDI through the automatic route and a dedicated road fund. In the case of telecom, policy glitches abound as the state attempts to dismantle monopolies.

Tremendous possibilities exist to enlist private sector support in infrastructure. Private sector participation can take various forms. Depending on the characteristics, an

infrastructure project can be more or less suitable for private sector participation. For instance, projects that capture significant social benefits such as urban transport or water works systems are more suited for traditional government ownership. This is because *non-exclusion* characteristic comes into play making pricing difficult. Indeed, in the first case even joint consumption comes into play making it close to the pure public good category. Of course this may not be true if tolls are applicable (as in the case of flyovers or express ways) and if metered connections (which is generally not the case) exist the above is not true for water. On the other hand, projects that offer more commercial returns such as telecom offer greater scope for private participation.

In the wave of privatisation and deregulation that has been sweeping across the globe, it is being increasingly recognised that ownership and operation of infrastructure facilities are separable and sophisticated models exist to meet the desired characteristics for individual projects. Most private sector participation is a variant of the build-own-operate-transfer (BOOT) arrangement. Herein the private operators finance and build a project, operate and generate project income and eventually transfer ownership to government at the end of the concession period.

While private sector participation may accelerate development in infrastructure, the government would still be a crucial player. An important initiative in this regard is the conceptual note that has been put out and discussed by the Maharashtra government, under the name of MIDAS Act. This is a comprehensive bill dealing with an entire gamut of issues from regulation to institutional aspects. It also deals with decision frame and policy implementation aspect as well as grievance redressal mechanism. Whilst this is an important state level initiative, the so-called Act completely by passes the ULBs and hence is open to possible criticism.

III.B. Joint Efforts by ULBs and Financial Institutions[1] (Specific Reference to Urban Infrastructure)

Here we deal with what can be done by the ULBs on their own as well as in conjunction with SCBs and DFIs.

III.B.1. Commercial Banks

Increasing bank exposure to the emerging sector of Urban infrastructure is being proposed here. There are three broad reasons for this. The first is the blurring of boundaries between institutions, the emergence of universal banks, which would necessitate banks taking longer exposures than hitherto. The other is the availability of funds in the banking system as many of its erstwhile borrowers are now disintermediating. The time is perhaps right for banks to take a view on this emerging sector. The third is the enormous opportunities of financing emerging from structured financial products, enabling the development of user driven models.

Given the concern of banks about their capital adequacy norms, NPAs and competitive margins there are ways that banks could possibly consider participation in this segment. One approach would be direct funding as in any other industry. In the initial phases this could involve cherry picking of projects till such time that the ULBs develop the required expertise and financial discipline and the lenders too develop experience of such lending. Participation could also be possible by combining with other intermediaries to lend to such projects.

An interesting point is that not all infrastructure projects are necessarily large. There are a vast range of small projects, which can be implemented in a span of 4 – 5 years which would be the comfortable time period for banks. Our financial system has had the experience of funding projects of this duration. The question that emerges is, as to why the banking system with over Rs. 1100, 000 crore of investible funds does not take exposure to the shorter end of infrastructure projects. Does it hinge on changes in

[1] This subsection is based on the paper by Abhay Pethe and Manju Ghodke submitted to the Indian Bankers' Conference, 2001, titled, ' Towards Bank Financing of Urban Infrastructure'.

the policy framework? Is universal banking the way out here? The entire focus of universal banking as suggested by the Narsimhan committee seems to be on financial institutions converting themselves into banks and getting into activities at the short end. In the fitness of things the same corollary would apply to banks extending their activity in the long-end.

The first category of projects could be those where the beneficiaries are identifiable and the benefits accrued to each beneficiary can be quantified. Examples here are telescopic rates for water supply and electricity and cross subsidy for public transport. The second category of projects would be those where beneficiaries are identifiable but the benefits accrued to each beneficiary are not quantifiable directly but can be estimated through indirect methods such as flat rate charges like toll on road / bridge usage. Both these categories could be commercially funded given the identifiable cash flows. The last category is of those projects where it is difficult to identify individual beneficiaries as well as to quantify the benefits accrued to the individuals or the groups of beneficiaries. Examples under this category are urban roads, street lighting and environmental improvement etc.

There are alternative ways of diversifying the risks of smaller government units through the use of bond banks, loan pools, and guarantees. These concepts, prevalent in industrialized countries, may be adapted to local situations on a country-by-country basis. However, the hard work of developing the foundations for creditworthy local governments cannot be avoided. This entails credible accounting and management systems; independent auditing of financial results; multi-year capital and operating budgeting systems; sound financial management and performance evaluation of government services; pension and administrative reforms to control personnel expenditures; improved and transparent procurement procedures; transparent political structure; and elected decision-makers accountable to voters. These changes will take place over time. In the meantime domestic borrowing trends will change incrementally as local governments have better access to capital, but with creditors being more selective in choosing borrowers.

III.B.2. Pooled Fund and Municipal Bonds

The major participation of banks in the area of urban infrastructure can be in the development of a vibrant secondary market for municipal paper. A number of committees had recommended the need for developing a strong municipal bond system for development of urban infrastructure. Despite the need for funds municipal bonds as a financial vehicle is still not widely used, as has been the experience of developed countries particularly the USA where municipal bonds account for 80 percent of the bonds market. Part of the reason is the unavailability of any secondary market in this instrument in India. The Rakesh Mohan committee in 1996 had recommended the development of a municipal bond system as part of the overall development of the capital market. The task force set up to assist SFCs also recognised the need to promote municipal bonds. The Ninth plan approach paper in 1997 also recommended the issue and trading of muni bonds.

In case of further deepening of the government securities market the RBI has already put in place certain institutional reforms. One such is the establishment of a clearing corporation with SBI as chief promoter. This would ensure mitigation of credit risk and would facilitate clearing and settlement of all transactions in money, government securities and foreign exchange markets. The other important development is the opening up of the repo market to bonds of PSUs and financial institutions. The setting up of a settlement fund and repeal of the Public debt act to simplify procedures in transactions and enable electronic transfer in demat an introduce order driven screen based trading. These institutional reforms could also be utilised for good rated municipal paper. The credit information bureau set up for the collection and dissemination of information on borrowers could be utilised to develop a database on ULBs as well.

The Urban infrastructure sector in India needs active participation from financial intermediaries along with putting together enabling policies leading to development. Given the strong growth in urban conglomerates and its implications for development we have ventured to suggest the possible ways of enlisting participation from existing

institutions such as banks which are better placed to take such an initiative. It is also more prudent in terms of time and cost saved in utilising the current set-up rather than the alternative of creating specialised institutions. In an era of universal banking such activities should definitely be put in place. Needless to add that the major part of the initiative will have to come from the ULBs themselves, either singly or in groups.

In the context of what has been suggested in this sub-section, the pre requisite is to get the ULBs to have uniform and transparent accounting norms in line with internationally accepted best practices. This will enable us to study the income expenditure and hence the surplus patterns and estimate the capacity to take on loans in a viable way. This could be on the basis of the overall budgetary picture or indeed on the basis of some sub-modules that represent steady flows. This would also facilitate rating to be undertaken for the purposes of floating debt. Much work has been done by Karnik, Pethe and Karmarkar for Second Finance Commission, UNDP/UNCHS and the World Bank. The data and analysis is comprehensively put together in the reports submitted by way of consultation activity and one of them is referred to in the footnote.

III.C. Internal Resource Mobilisation by the ULBs[2]

As is obvious, resource crunch is an undeniable reality in the context of Indian macro-economy. The problem is elephantine and needs to be attacked severally and in various ways. Apart from the ways suggested in earlier sections, revenue can be raised by rationalizing user charges/fees and taxes, expenditures can be cut by looking closely at non-essential expenditure and finally overall better management and accounting practices will also help. Here, we suggest some measures – with special focus on property tax – that would enable the ULBs to set their 'house in order'.

[2] This subsection is based on the study "Evolving Criteria For Allocation Of Funds As Per The State Finance Commission Recommendations From The State To Urban Local Bodies To Strengthen Decentralisation Efforts By Urban Local Bodies" (jointly with Ajit Karnik and Dilip Karmarkar) submitted to *United Nations Development Programme (UNDP) and United Nations Centre For Human Settlements (UNCHS/UN-Habitat) in May 2002.*

III.C.1.Ways and Means of Raising Resources

Improving overall finances of the ULBs in general would involve various steps like:

- Prudent management exercise
- Spending of resources on appropriate items
- Cutting costs
- Minimizing unproductive expenditure by spending on identified priorities,
- The selection of appropriate low cost technologies
- Proper maintenance and timely replacement of exhausted infrastructure
- Private sector participation
- Identification of socially essential subsidies and elimination of inessential ones.

The major sources of revenue for the Municipal Corporations are octroi[3], property tax, water charges and many other conventional non-tax revenues. Water supply and sewerage schemes are reflected in a separate budget and accounting system and the money can not be utilised for other purposes in the general kitty.[4] Octroi is the largest component of income followed by property tax. Both the sources need some revisions, which we will consider separately. The recovery percentage of property tax, in its present structure is around 60 to 65 percent, in case of Corporations and between 40 to 50 percent, in case of Municipal Councils. Hence there is a scope for further improvement. There are other sources of revenue and some have been considered for adoption in various ULBs, in a scattered manner, both in Maharashtra and in other States.

3.Octroi has been abolished from A, B & C Municipal Councils since May 1999.
4.This is so only in case of Municipal Corporations and not the Councils. Recently, Water Supply Department has issued guidelines to the Councils about this and introduction of the double entry accrued accounting procedures, but the implementation has not yet started. Director, Municipal Administration is in the process of formulating uniform accounting code for the Councils.

Land can be looked upon as a major resource available. It can attract good income without any other financial support. Development of precious real estate can be a lucrative source of income for a local body, as illustrated by the "Palika Bazaar" in New Delhi. Commercial exploitation of lands through construction of offices, commercial complexes and earning lease rent on them, is a non-conventional source of revenue.

The concept of "Floor Space Index (FSI) Bank" can be also developed. The regulations of the ULB could stipulate a certain level of FSI normally available in a locality and the excess FSI could be purchased at a premium from the FSI Bank created by the ULB. Evidently, there would have to be a cap on such use of FSI bearing in mind the ability of the city to absorb additional construction and provide for city infrastructure.

The concept of contributing amenity spaces in exchange for FSI, equal to the FSI potential of the land surrendered, is also a method of alternative revenue generation. Thus, in particular scheme of development, the owner of the land can give away certain percentage of his land for public purposes and get compensated in terms of FSI of that land, and not in terms of absolute money. The FSI can be utilised on his/her remaining land.

Accommodation reservation is a further concept that is being considered in some cities. Through this arrangement an owner is allowed to use the full construction potential of his land, as per prevailing FSI, on a portion of that land, if he surrenders part of the rest to the corporation for public use. Similar to the use of FSI in financial terms, the concept of TDR (Transferable Development Rights) can also attract handsome revenues to the ULB. If the ULB intends to take over a plot of land for public use the owner's ability to built on that land is taken away. Traditionally, the land owner is compensated through payment of acquisition money, but under TDR, it may allow him to use the construction potential on some other plot. If the landlord does not own an alternate plot, he can sell the TDR, just like shares to anyone who wishes to use it. Hence, ULB's finances are saved and the TDR concept can prove to be a good tool, not

merely for land acquisition, but also for getting public works executed against the grant of TDR through a calculation of costs of works, and the market rate of TDR.

If a developer's site is appreciating in value, thus acquiring greater salability due to the infrastructures provided in the locality by the ULB, the municipal body should also get a financial benefit of it. This can be achieved by administrating development charges or impact fees. The concept can also be used for high rise buildings, by levying a premium on account of special arrangements needed like maintaining water pressures, more sophisticated fire fighting systems amongst other things. Advertisement tax or fees is yet another source of income, particularly for a commercial city.

Other possible sources for revenue generation can be pay and park facilities, fees by recreation facilities like gardens, swimming pools etc. Normally it is observed that the charges collected by the ULB are not proportional to the financial status of the citizens using the facilities. For example, the charges for swimming pools are generally low. Such facilities should be provided at charges that can take care of at least the revenue expenditures necessary to provide the facilities.

III.C. Property Tax Initiatives

Growing fiscal constraints and the widening responsibilities faced by the local governments at the beginning of this section. Such constraints did not attract serious attention a few decades back but now it has become necessary to examine the associated problems and explore possible remedies. The growth of responsibilities, especially after the 74th Amendment to the Constitution, has left almost all local governments with virtually no room for curtailing their expenditures to correct for the fiscal crisis that most of them face. Therefore, over the last decade much attention has been focused on the need to identify various revenue raising options.

In this context, the property tax, levied on the rateable value of immovable properties in municipal jurisdictions, has aroused significant attention in recent times. Even though this tax can be a buoyant source of revenue it has remained stagnant over

the years in most Indian cities. Further, given the way in which the tax is administered, it has been shrouded in controversy since it was felt that it violated the basic canons of taxation, specifically equity. Equity was violated in its administration since often properties, by and large similar, bore very different tax burdens. Various studies [Bagchi, 1997; AIILSG, 1999][5] have suggested drastic reforms in the rateable value based property tax system in order to get rid of several lacunae.

In the early 1990s, governmental recognition of the problem acquired a concrete form in the Guidelines circulated by the Ministry of Urban Affairs and Employment, which suggested a variety of reforms. The pioneering effort made by the Patna Municipal Corporation, which got the legal support despite controversies, paved the way for initiating drastic reforms in various other cities.

Brihanmumbai Municipal Corporation (BMC) has also taken an initiative to explore the possibilities of rationalising its property tax structure. The BMC commenced its initiative with a study of an area-based rateable value model for its jurisdiction. However, working out suitable fiscal zones to capture characteristics such as location in the city, proximity to a main road/railway station/market/other infrastructure in a large city like Mumbai would be a formidable task. Inevitable, such a zoning system would be afflicted by arbitrariness and would not represent a significant improvement over the existing system. Consequently, the alternative system may not be as transparent as expected. In the light of the deficiencies of the area based model the BMC is currently actively considering an alternative, capital value based property tax model whose advantages have been noted in the literature.

An ideal tax reform procedure should take the existing tax structure, as its starting point and change should be slow and piecemeal. The BMC will have to take into account the effect of the change in the tax system on allocation of resources as well as on the redistributive impact of the change. For instance, a change in tax burden on industry may result in the industry moving out of BMC jurisdiction over a long period.

[5] Bagchi A. (1997) "Reforming the Property Tax Base: need for a new direction", Economic and Political Weekly, November 22. AIILSG (1999) "Guidelines for Property Tax Reform", Quarterly Journal of AILLSG, Vol. LXIX, No. 2.

Further, differential tax burden on vacant lands vis-à-vis constructed properties may distort incentives in favour or against improvement of property. On the other hand, a change in tax burden on different sets of property owners may improve the welfare of one set at the expense of another. Such redistribution is inevitable but may lead opposition from aggrieved parties. In study done by Ajit Karnik[6] for the BMC an alternative capital value based model has been developed for property tax in the city of Mumbai.

IV. Sectoral Issues

Maharashtra State, spread over an area over an area of 3,08 lakh sq.km.,is the most populous State in India, with a population of 96,75 million as the 2001Census. It is the most urbanised state in the country, with about 42.40% of its population residing in urban areas, as against the national average of 27.78%. The urban areas have experienced higher population growth than that in the rural areas (viz. 39 per cent against 18 per cent). The urban population lives in 378 towns There are 43,722 villages and 45,896 wadis, spread over in 35 districts of the State, which accommodate the rural population of 55.73million registered in 2001 census. We now turn to the consideration of two sectors, in the State viz., Power and Water.

IV.A. Power Sector Scenario in Maharashtra

The development of infrastructure – to repeat – is an important factor to sustain economic growth in all sectors of the economy. Power sector is one of the most important constituent of infrastructure. The performance of the power sector directly impacts the overall economy of the State. Economic liberalization in the early 1990s has required industry to be competitive by inter-alia reducing costs. Since power cost comprises a reasonable part of the total cost, the quality and cost of power is an important factor for industries to be competitive, and for the welfare of all citizens of the State. Power sector is thus a crucial sector for consumers as well as for industrial development of the country. This is especially important for Maharashtra that is one of

[6] Ajit Karnik and Others (2001) "Rationalisation of Property Tax in Mumbai Municipal Corporation" Final Report Submitted to the BMC.

the most industrially developed states in India. Maharashtra is the second-most populous State in India. With less than 10 percent of population of the country, the State accounts for one-fourth of the gross value added by India's industrial sector. Up to the 1990s, the State experienced a high growth rate. However, the State has seen a decline in growth rates in recent years.

Even at the national level, with the exception of the Second and the Third Five Year Plans, the share of electricity sector in the total plan outlay has been about 15-20%. The share of approved outlay of the Power Sector in the Ninth Plan in percentage terms has marginally declined to 14.49% of all (sector) approved outlay. Out of the allocated outlays, the provision for T&D schemes has been lower than the desired level of investment in the past. Inadequate investments in the T&D systems could be one of the major reasons for poor quality of supply of electricity (voltage fluctuations and break-downs). Apart from regular investment by states in strengthening their sub-transmission & distribution network, the Government is providing investment through Accelerated Power Development Programme (APDP) as part of reform package to states willing to implement the reforms in distribution sector. This may facilitate higher investment in Transmission and Distribution System during Tenth Plan and bring down the level of T & D Losses. Another important area, which could yield tangible benefits is adequate investments in renovation and modernisation (R&M) of existing generation plants.

IV.A.1.Existing System and Sector-mix of Power Generation

The Maharashtra State Electricity Board was formed under Section 5 of the Electricity (Supply) Act, 1948, which Is a Central Act. The Bombay Electricity Board was formed on 6th November, 1954 and continued upto 31st March 1957. The Bombay State Electricity Board was formed on 1st April 1957 and continued upto 19th June, 1960. The Maharashtra State Electricity Board came into existence on 20th June 1960. The power sector in Maharashtra, excluding Mumbai, is served by Maharashtra State Electricity Board (MSEB). The Mumbai area is served by three power utilities – Tata Power Company Ltd., BSES Ltd. and BEST. MSEB has an installed capacity of 9743.57 MW, whereas Tata Power Company Ltd. has an installed capacity of 1693 MW and BSES

has an installed capacity of and 584 MW respectively. The Tata power company supplies electricity directly to bulk consumers. The Company owns, operates and maintains as a licensee for Mumbai and its suburbs. In terms of fuel mix thermal, hydro and wind capacities in the State including the private sector but excluding the captive and central generating sources account for 75.8%, 21.8% and 2.5% respectively. The type of inputs that are used for power generation are as follows:

TABLE IV.1

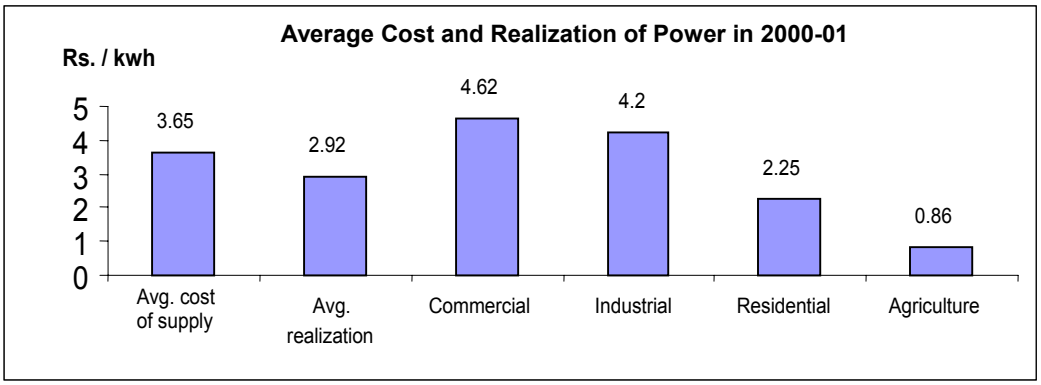
Installed capacity in Mw as on 31st March 2002 *(provisional)*							
	Hydel	**(%)**	**Thermal**	**(%)**	**Wind**	**(%)**	**Total**
MSEB	2400.17	24.63	7337	75.3	6.4	0.07	9743.57
TECo (Maharashtra)	447	26.4	1246	73.6	0	0	1693
BSES (Maharashtra)	0	0	584	100	0	0	584

Source: Annual Report on working of SEB 2001-02; Planning Commission.

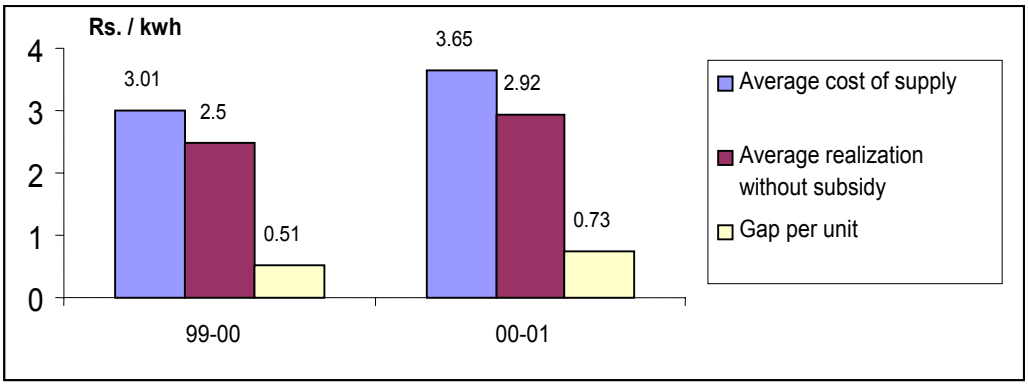
MSEB was set up in 1960 to generate, transmit and distribute power to all consumers in Maharashtra excluding Mumbai. MSEB is the largest SEB in the country. The generation capacity of MSEB has grown from 760 MW in 1960-61 to 9743.57 MW in 2001-02. The customer base has grown from 1,07,833 in 1960-61 to 1,40,09,089 in 2001-02. MSEB has a strong generation capacity base. Its generation plants have been receiving awards for achieving high PLFs and other efficiency parameters. In spite of poor quality coal, its thermal power stations achieved an all time high by increasing its power availability to 86.49% and plant load factor to 74.34% in 2001-02. It has the largest Transmission & Distribution (T&D) network in the country with 6.67 lakh ckt kms. The energy sale has grown from 346 MU in 1960-61 to an estimated 37,067 MU in 2001-02. About 48% of MSEB's thermal generation capacity is between 15-25 years old and 15% is over 25 years old. This would necessitate significant investments in renovation and modernization of these plants. The LT to HT ratio of transmission lines is about 2 leading to high technical losses. There is need for investing funds estimated at

Rs. 18,570 crores over the next 10 years to reduce technical losses, increase coverage of the T&D network, meter all consumers, strengthen rural electrification, expand the HT network coverage and strengthen internal systems.

The predominance of social objectives has led to a lack of commercial orientation in the power sector. Tariffs for domestic, power looms and agricultural segments are lower than the average cost of supply of power, and are subsidized by industrial and commercial consumers. The distorted tariff structure has led to an increase in high-paying industrial consumers setting up their own captive generating stations which currently have generating capacity of about 641 MW. In addition, NOCs for an additional 1181 MW captive capacity have been given. While consumption of power from the MSEB grid by high-paying industrial consumers has been on the decline, consumption by subsidized consumer categories has grown over the past few years. Further, the low tariff for subsidized consumers has not only led to lower revenues, but also to sub-optimal consumption from these consumers. The difference between average cost of supply of power and realisation for the different consumer segment is shown below.



The gap between average cost of supply and average revenue realization for the years 1999-00 and 2000-01 is shown in the bar chart below.



The T&D losses are high at about 39.4%. The loss levels are currently not accurately measurable since only about 85% of consumers are metered. The T&D losses can be categorized as technical losses and commercial losses. However, guidelines issued by Government of India (GoI) stipulate that T&D losses in each State should not be more than 16%. Every 1% reduction in the T&D loss levels is equivalent to additional revenues of about Rs. 120 crores.

IV.A.2. Reforms and Restructuring

Despite the efforts of MSEB, there is unmet demand for new connections as well as shortage of power to existing consumers mainly during peak hours. MSEB has estimated that the energy requirement will increase from 59295 MU in 2001-02 to 87262 MU in 2011-12 and peak demand from 9893 MW in 2001-02 to 14104 MW in 2011-12. This would necessitate further investments in generation sector estimated at Rs. 11,905 crores over the next 10 years. In addition, it is essential to modernize and expand the transmission and distribution system. The sector also needs to keep up with technological developments. The total requirement of funds for investments in generation, transmission and distribution is estimated to be Rs. 30,475 crores in the next 10 years.

If the current situation is allowed to continue, the investment requirements will increase further leading to declining quality of supply and reluctance on the part of GoI and financial institutions to provide funding to the State. Investments required in

generation, transmission and distribution cannot be delayed. The main objectives of reform are:

- To promote the development of an efficient, commercially viable and competitive power sector.
- To provide reliable quality and uninterrupted supply, at reasonable prices, to all consumer categories.
- To ensure that social and environmental aspects are fully taken into consideration.

The different options of reform which were suggested are broadly summarized as follows:

- MSEB to retain its existing identity. The three functions of MSEB viz. generation, transmission and distribution to be run as profit centers.
- Corporatisation of MSEB without unbundling.
- Unbundling and corporatization of unbundled entities of MSEB.
- Unbundling, corporatization of unbundled entities of MSEB followed by privatisation of distribution entity(s).

Demand side management

The reform process will focus on demand side management with the objective of improving efficiency in end-use of electricity. Focus on demand side management reduces the need for additional generation capacity. Electricity saved is much more than electricity generated particularly considering the added benefits of avoided T&D losses, savings in fuel and the positive impact on environment.

Structural changes

MSEB is currently too large of an organization, which prevents it from functioning efficiently. A vertically integrated MSEB catering to the diverse needs of a customer

base of 140 lakhs, which is growing every year, has inherent limitations. Organization of the electricity industry into vertically integrated monopolies is no longer necessary in view of technological advances and a reduction in economies of scale. While internal reforms are necessary, they would not be sufficient. Despite MSEB having initiated efforts of energy audit, focus on metering and on increasing collections, revenue realization has not shown major improvement. The GoM has proposed thatin the next one year; MSEB would be corporatised into separate generation, transmission and distribution companies.

Rural Electrification:

Decentralized generation projects should be encouraged in rural areas. This will ensure the rural user gets good quality power at standard voltages without overloading the grid. Maharashtra state claims to have achieved 100% electrification of villages, which when compared to other states is quite commendable as very few states have been able to undertake the mammoth job of 100% electrification of villages.

IV.A.3. Comparison with other States:

In a recent study done by the Department of Power, Government of India, various electricity boards and electricity departments were given scores according to the various factors that are listed in the table given below.

TABLE IV.2

Parameter	Maximum Score
State Government Related Parameters	20.0
SERC Related Parameters	20.0
Business Risk Analysis	25.0
Generation	6.0
T&D	19.0
Financial Risk Analysis	30.0
Others	5.0
Total	100.0

On the basis of the above criterion/indicators/scores the different states in India were given points and hence ranked. The performance can be seen from the table given below.

TABLE IV.3

Sr. No.	State/Union territory	Score Assigned
1	Andhra Pradesh	71.5
2	Assam	18.2
3	Bihar	11.2
4	Delhi	52.5
5	Goa	41.1
6	Gujarat	51.4
7	Haryana	64.0
8	Himachal Pradesh	49.4
9	Jammu & Kashmir	32.5
10	Karnataka	68.0
11	Kerala	32.5
12	Madhya Pradesh	31.5
13	Maharashtra	60.0
14	Manipur	14.69
15	Meghalaya	24.6
16	Mizoram	11.66
		Contd…..

Sr. No.	State/Union territory	Score Assigned
17	Nagaland	16.6
18	Orissa	33.0
19	Punjab	45.0
20	Rajasthan	64.0
21	Sikkim	19.10
22	Tamil Nadu	47.5
23	Tripura	18.7
24	Uttar Pradesh	42.83
25	West Bengal	35.9

As may be seen, Maharashtra stood at the fifth place with a score of 60.0. Andhra Pradesh, Karnataka secured the 1st and 2nd place whereas Haryana and Rajasthan jointly shared the 3rd place. Given that Maharashtra is a leading progressive state in India there cannot be any doubt that there is scope for much improvement.

The issues to be looked at may be listed as follows:

- The overall gap between the demand and supply of power in the state of Maharashtra. The demand has to be further subdivided by use so that the deficiency can be estimated as per the user category. Apart from the quantity involved the financial gap needs to be estimated user category wise. This would enable one to study the extent of cross subsidy involved.

- The charges need to be rationalized so that the theoretical principle of covering O & M charges is satisfied.

- The analysis of the physical and financial gap needs to be analysed from different perspectives. This will enable us to pin point the remedial measures and the investment required. This will further help to set up institutional framework wherein responsibility and accountability are meaningfully attributed.

- The losses need to traced back through the process breakup. This will enable one to identify the stage at which the losses are being incurred, either in the process (generation, transmission, distribution) or sector of activity (rural, urban) or indeed the end users (consumers, commercial users).

Addressing the above issues will help not only diagnose the problems confronting this sector but also formulate a road map for policy that would help to rectify the situation. Let us now turn to the other sector, viz., water.

IV.B. Water in Maharashtra

Water is rather important when it comes to any activity. It is clearly a very basic amenity and its provision must fall squarely within the essential responsibility of the state. Since approximately 56% population of the State resides in the villages we look at issues relating to both, rural and urban water supply in the state of Maharashtra.

IV.B.1. Rural Water Supply

The review taken by the government on 1st April, 2000 indicates that out of 40,402 villages 22,209 (i.e.54.97%)and out of 45,528 wadis 29,149 wadis (i.e.64%) were fully covered with water supply facilities (i.e.per capita supply more than 40 lpcd) leaving about 18,193 villages (i.e.45%) and 16,379 wadis(i.e.36%) still without a safe and adequate source of water supply. No information is available on the quality of service in rural areas. Large tracts are not covered at all or are only partially covered. Even the areas fully covered are given only intermittent supply, resulting in a highly irregular supply.

Information on the quality of drinking water supply is not available on a systematic basis. Limited surveys conducted recently indicate that bacteriological contamination of the drinking water is high in the urban and rural areas. The main reasons for high contamination are the lack of appropriate sanitation, absence or inadequate dose of the disinfectant and recontamination in the distribution network.

In addition the duration of water supply in rural areas varies from one to three hours per day. A majority of the rural piped water supply schemes do not supply water at the pressures intended in the design of the scheme. At various retail delivery points, pressure is almost negligible and consumers have to wait for a long time.

The Master Plan of 1996 indicates that the investment requirements for the rural sector are over 8449 crores (at 2000 prices) These estimates are mostly for piped water supply schemes. However, with the implementation of the recently approved sector reforms package, with a focus on demand based on approach, the investment requirements for the rural areas are expected to be reduced to approximately Rs.3000 crores. The main issues and constraints in rural water supply sector are:

- **Source Sustainability**

Approximately 90% of rural water supply schemes depend on groundwater. As a result of overexploitation of the groundwater sources, many of the rural water schemes at the village level have become unsustainable during the summer period. A significant number of habitations (11% to 28%) have experienced water scarcity during the summer months.

- **Quality Problems**

Several villages in the State experience the incidence of excess iron and fluoride in their local water supply. Altogether 875 villages spread over 28 districts are affected by excess iron. A majority of these villages are located in Sindhudurg, Ratnagiri, Raigadh, Thane, Solapur and Nagpur.1183 villages in 28 districts are also affected by excess fluoride.

- **Breakdown of Operation and Maintenance in Rural Water Supply**

The current emphasis on targets and norms only encourages excessive investments and undermines the proper operation and timely maintenance of existing schemes. In most places in the rural areas, schemes with an estimated life of 15 to 20 years were in such position even within 5 years of commissioning they would not last their designed life span. Moreover, there is hardly any operational autonomy in undertaking O and M at the local level. A regular data base of maintenance activities is not kept, resulting in lack of general information about the status network. Water supply schemes are also affected by lack reliable power supply. As a result, schemes are not designed for 24 hour water supply.

- **Transfer of Completed Schemes for O and M**

Once the drinking water schemes are executed by any of the three agencies (the MJP, the GSDA and the ZPs), they are expected to be handed over for subsequent operation and maintenance to the respective ZPs and GPs. If a scheme is for a single habitation falling within the jurisdiction of one of one GP, it is to be taken over for operation and maintenance by the concerned GP. The executing agency hands over the scheme to the GP after carrying out trial runs for a short period of time. In the case of regional water supply schemes, the responsibility of operation and maintenance rests with the ZPs.

Though Panchayati Raj Institutions(GPs and ZPs) are responsible for O and M, they are reluctant to assume these responsibilities. All completed schemes do not get handed over to the ZPs and GPs concerned in time. As on April 1, 2000. 105 regional drinking water supply schemes and 149 individual schemes were still to be taken over by the respective ZPs and GPs.

- **Lack of Cost Recovery**

The State Government is empowered to prescribe the maximum and minimum rates of annual water tax to be levied by the Gram Panchayats. The Rural Development

Department has accordingly specified a minimum and maximum of Rs.75 and Rs.250 respectively.

However the implementation has been weak.

- Approximately, 16% of villages do not have any tariffs for water supply and another 29% of the villages have old tariffs, which have been in force for the last 30 years.
- Approximately, 58% of villages have tariffs in the range of Rs.75 to 150 per annum and 4% of villages have tariff between Rs.151 and 250 per annum.
- In addition the collection of tariffs is extremely low, varying from 15 to 95%.

IV.B.2. Urban Sector Coverage

Excluding Greater Mumbai, there are 18 Municipal Corporations and 226 are Municipal Councils.Since 1971,the number of urban local bodies increased from 227 to 245 (including Greater Mumbai) in 2002, while the urban population increased to 42.40 per cent in 2001.However, the quality of urban services has failed to keep pace with the growing urbanisation over a period of time.

Urban Water Supply and Sewerage Programme

- The responsibility of providing safe drinking water supply and sewerage services primarily rests with the local bodies. However, since huge investments are needed, the local bodies are incapable of undertaking these schemes through their own resources. The State Government, therefore, provides grants and also arranges for the loans on concessional terms, from LIC and HUDCO and other multilateral agencies. The financing pattern has been given as:

TABLE IV.4 (REVISED FINANCING PATTERN)

Sr. No.	CATEGORY OF LOCAL BODIES	FINANCING PATTERN (PER CENT)			
		G.I.A	LOAN	POPULAR CONTRIBUTION	TOTAL
1	All Municipal Corporations (except Mumbai)	23.3	66.67	10	100
2	A class Municipal Councils	25	65	10	100
3	B class Municipal Councils	40	50	10	100
4	C class Municipal Councils	50	40	10	100
5	C-1 class Municipal Councils	90	-	10	100
6	Villages	90	-	10	100

The operation and maintenance of the urban water supply and sewerage schemes is expected to be undertaken by the local bodies. In reality however this is not so. In terms of access to a safe potable water source, the coverage in the urban areas may be said to be good because all the cities and towns claim to have a regular piped water supply system; but the reality is far from this, much less than 100% of the population in urban area has been covered by the piped water system. Thus, there is significant portion of the population in almost every city, which has to obtain its water supply requirement from other including the private sources.

The public water supply systems are owned by different agencies

- Some water supply systems, from the source works to the distribution, are owned by the MJP. It also owns the bulk water supply works from the source up to the city while the distribution systems within the city are owned by the urban local bodies.

- Majority of the urban water supply schemes is owned by the local bodies. MIDC supplies water from its own water supply schemes to a few urban local bodies such as Thane, Kalyan etc.

The main issues and constraints in urban water supply in Maharashtra are:

- **Poor Service Coverage**

The Manual on ' Water Supply and Treatment' published by the Central Public Health and Environmental Engineering Organisation of the Government of India recommends the following norms

TABLE IV.5

Classification of Towns/Cities	**Recommended LPCD**
Towns provided with piped water supply but without sewerage system	70
Cities provided with piped water supply where sewerage system is existing	135
Metropolitan cities provided with piped water supply	150

*Source :CPHEO's Manual on Water Supply and Trea*tment

In urban areas where water supply is provided through public standposts 40 lpcd should be considered for the standpost supply. 171 towns in the State are getting water supply below the norms and average percentage of water supply available in summer season is below 60.48% of the norms. And 72 towns are getting water supply as per the norms above.

♦ **Poor Cost Recovery**

Except Mumbai, in all other Corporations the recovery is less than O and .M. Tariffs levels are uniformly low in almost all Municipal Corporations and Councils. Even to break even in terms of just the breakdown maintenance expenses and staff salaries, the urban local bodies will probably need to charge 2 to 2.5 times of their current tariffs.

♦ **Deficient Institutional arrangement**

The responsibility of construction and commissioning of water and waste water systems in most of the urban areas is with MJP. The facility is transferred to the local bodies concerned for O and M, after commissioning the project. However 43 local bodies have refused to take over the systems from the MJP mainly because of lack of resources to finance O and M. Finally just as in the last subsection (on power) one should concentrate on some of the parallel issues that confront the water sector. The rationalization of user charges is extremely crucial and will require considerable political will. The accounting norms for ULBs as well as for the MJP is even more crucial. The current picture from the accounts of MJP completely misrepresents the true stark reality.

V. Conclusion

Thus in this paper we have looked at the infrastructure development in Maharashtra. That infrastructure –especially urban – is *numero uno* problem is incontrovertible. It is also obvious that development in this area will unbound vast developmental potential. While infrastructure is an umbrella term we have here, looked at a few selected topics. There are implications for policy in terms of regulation, pricing and overall policy reforms that would bring private sector and financial institutions within the fold of this process.

SELECT BIBLIOGRAPHY

1. Karnik A.V., A. M. Pethe and D. Karmarkar (2002)***: An Approach to Designing Inter-Governmental Transfers" a study dealing with "Evolving Criteria For Allocation Of Funds As Per The State Finance Commission Recommendations From The State To Urban Local Bodies To Strengthen Decentralisation Efforts By Urban Local Bodies,*** Final Report submitted to *United Nations Development Programme (UNDP) and United Nations Centre For Human Settlements (UNCHS/UN-Habitat) in May 2002.*

2. Karnik A.V., A. M. Pethe and D. Karmarkar (2001)***: Developing Quantitative Framework for Determining Devolution of funds from the State governments to Local Bodies,*** *Final Report submitted to Maharashtra State Finance Commission,* Government of Maharashtra, September, 2001.

3. Karnik A.V., A. M. Pethe and D. Karmarkar (2002)***: Assessment of Revenue and Expenditure Patterns in Urban Local bodies of Maharashtra***, Working Paper 5, Vibhooti Shukla Unit in Urban economics and Regional Development.

4. Karnik A.V. and Others (2001): ***Rationalisation of Property Tax in Mumbai Municipal Corporation,*** Final Report Submitted to the BMC.

5. Pethe A.M. and M. Godke (2002): *Funding Urban Infrastructure*, *From Government to Markets* **Economic and Political Weekly**, 2002 June 22nd.

6. Pethe A.M. and M. Godke (2002): ***Towards Bank Financing of Urban Infrastructure***, Working Paper 2, Vibhooti Shukla Unit in Urban economics and Regional Development.

Dr. Vibhooti Shukla Unit in
Urban Economics & Regional Development

WORKING PAPER SERIES

NO.	TITLE	AUTHOR(S)
1	From Governments To Markets: Funding Urban Infrastructure	Dr. Abhay Pethe Ms. Manju Ghodke
2	Towards Bank Financing of Urban Infrastructure	Dr. Abhay Pethe Ms. Manju Ghodke
3	Developing A Quantitative Framework For Determining Devolution Of Funds From The State Government To Local Bodies	Dr. Ajit Karnik Dr. Abhay Pethe Mr. Dilip Karmarkar
4	On Developing Macro-Diagnostics For Evaluating The Fiscal Health Of The Indian States: The Case Of Madhya Pradesh	Dr. Abhay Pethe Dr. Mala Lalvani
5	Assessment of Revenue And Expenditure Patterns In Urban Local Bodies Of Maharashtra	Dr. Ajit Karnik Dr. Abhay Pethe Mr. Dilip Karmarkar
6	Capital Account Convertibility, The Unfinished Agenda: MARK I	Dr. Abhay Pethe Dr. Balwant Singh Mr. Shripad Wagale