

## **Policy Framework for Management of Physical Infrastructure in Pakistan**

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### **Abstract**

Physical infrastructure is a measure for development of a country. Huge amount of tax payers' money and foreign borrowings are invested every year in development of new infrastructure facilities to improve the quality of life. In the developed part of the world an equal importance is now been given to not only sustainable development but also to the management of such public infrastructure. Most of the countries, including a number of developing countries, have started monitoring practices to save their national asset and have made management of such infrastructure mandatory through legislation. It is essential to Pakistan's national economic prosperity that infrastructure is constantly developed at rates comparable with other developed economies, as well as a policy is devised for efficient and effective infrastructure management in the country to preserve country's national asset. This paper examines the need of development of a federal policy for the development and management of physical infrastructure in Pakistan and also provides a framework for the policy.

### **Keywords**

Physical Infrastructure, Federal Policy, Life Cycle Management, Asset Management

### **1. Introduction**

Infrastructure is a vague term that typically refers to large-scale capital projects, which provide the foundation for the economic activity of a region or nation. Infrastructure is made up of a wide variety of fixed capital investment whose specific composition changes over time with the development of new technologies. During any particular period, there are certain forms of capital development, which are recognized as a prerequisite for maintaining economic growth and are seen as a necessary component of the economic foundations of a modern economy. They are a platform for economic activity in general and enable other forms of production to go ahead. Developed infrastructure is pivotal in attracting foreign investment, creating fixed capital as well as producing other goods and services.

It should be noted that while much infrastructure has been provided through public sector activity, there is nothing intrinsic to infrastructure that would necessarily require such developments to be provided by government. Infrastructure itself refers only to kinds of investments, not to whether the providers are from the private or public sector. Yet from a description of the typical nature of infrastructure developments, it can be seen why infrastructure has often been associated with the public sector. It is because such developments are essential for economic activity, are generally large scale requiring large outlays of capital, often embody elements of natural monopoly, are often structured in ways that makes it impossible to charge a price in which the full social benefits are encompassed in the private returns to sellers, and are often highly political in that the community will judge governments by the standards achieved both in terms of service delivery and prices charged.

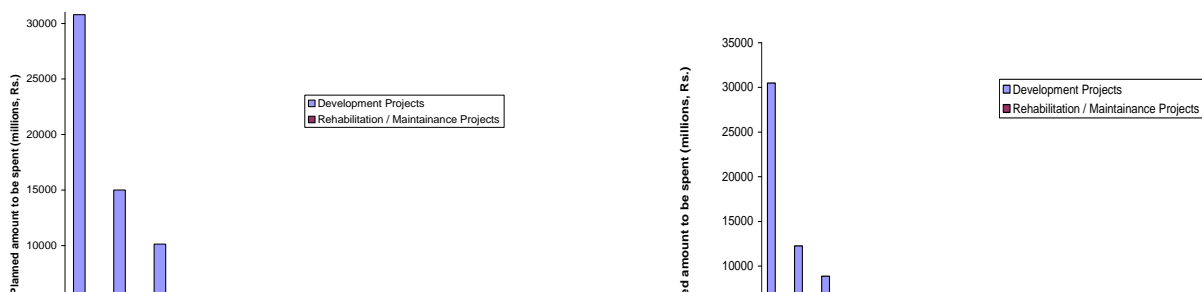
It is worth mentioning that businesses are not only providers of infrastructure, but are also, more importantly, users. It is as users of infrastructure that this policy framework has been developed as it is in interest to the business community in general that comprehensive and efficient infrastructure be provided.

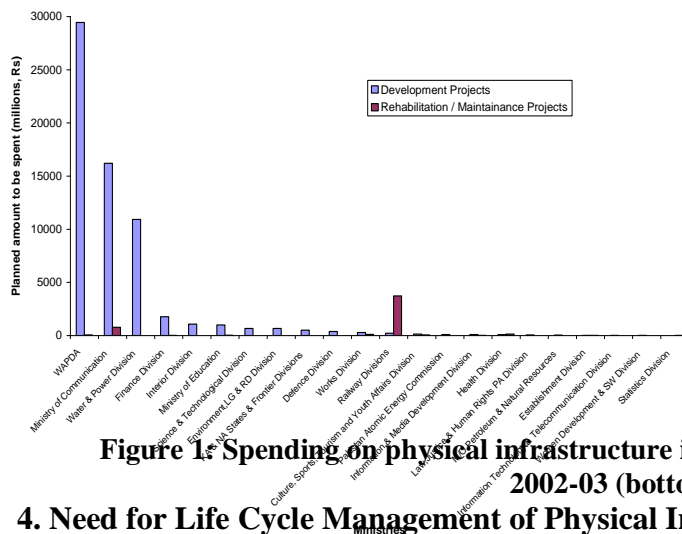
## 2. Current State of Physical Infrastructure in Pakistan

To measure the state of affairs in physical infrastructure in the social sector, it is worth mentioning that there are only 98264 hospital beds ([www.pakboi.gov.pk](http://www.pakboi.gov.pk)) available to the entire population of Pakistan in the public sector hospitals. This makes 6.55 beds for every 10000 persons. There may be a bigger contribution from the private health sector but this too is limited to urban population and at exorbitant cost. Similarly, there are only 195400 schools ([www.pakboi.gov.pk](http://www.pakboi.gov.pk)) available in the public sector to the entire population of the country, thus making one school per 1000 population. Like healthcare, private institutions contribute significantly towards education but at a very high cost and are concentrated to the urban centres. Providing healthcare facilities and education is one of the major roles of the government whereas the above statistics show the inadequacy of the investment made by the government in this regard. These figures are representative of the current state of physical infrastructure in general. Hence a core task for the government should be to get the best use of country's physical infrastructure. To achieve the optimal budgetary allocation, inter-sectoral and intra-sectoral budget allocations must be evaluated. This assessment involves recognizing the comparative advantages and obligations of the public and private sectors.

## 3. Investment in Physical Infrastructure in Pakistan

In Figure 1, sector-wise allocations are given for the years 2000-01 (Public Sector Development Programme, 2000-01), 2001-02 (Public Sector Development Programme, 2001-02) and 2002-03 (Public Sector Development Programme, 2002-03) for the development projects and maintenance of some of the already developed projects. For the year 2000-01 an amount of Rs. 67695.64 million were allocated for development projects whereas only Rs. 2467.005 million were allocated for maintenance and rehabilitation of existing infrastructure, thus making an investment of only 3.5% of the total allocations for upgrading of infrastructure. Similarly, these figures were Rs. 62280.228, Rs. 5866.288 and 8.65% for the year 2001-02, and Rs. 63648.178, Rs. 4958.393 and 7.23% for the year 2002-03. From this data, it is clear that there is very little investment towards maintenance of infrastructure. This is primarily due to lack of awareness in this respect. It is feared that if no importance is given to scientific management of physical infrastructure, a time will come where it would require a massive effort to maintain a reliable infrastructure. Karachi Electric Supply Corporation can be taken as an example where the company was under loss yet selling a monopolized service. It could be argued that it was due to the poor management and bad governance, nevertheless, the factor of improper maintenance of lines, transformers etc. have contributed towards the significant losses of the company.





**Figure 1. Spending on physical infrastructure in 2000-01 (top left), 2001-02 (top right), 2002-03 (bottom left)**

#### 4. Need for Life Cycle Management of Physical Infrastructure

Developed physical infrastructure can only be considered as a measure of development if built on reliable and sustainable basis. Unfortunately, the infrastructure construction in Pakistan has not yet been conceived as an Asset Management issue, which demands not only infrastructure development but also infrastructure management. The government is in dire need of a policy that is able to consider a broad range of assets, categorize the assets, incorporate the socio-economic, financial and technical assessment of trade-offs between alternative investment options both at the project level and at the program level, and uses this information to help make cost-effective investment decisions.

In the developed part of the world, the issue of Asset Management has already been established and an equal importance is now been given to life cycle management of public infrastructure. Countries like USA (Penner, 1986), UK ([www.nisc.gov.uk/niscc/index-en.html](http://www.nisc.gov.uk/niscc/index-en.html)), New Zealand (Clough et al, 2004), Australia (International Infrastructure Management Manual, 2002), Canada (Barakat et al, 2003), Netherlands (Enserink) etc. have made life cycle management of their physical infrastructure mandatory through legislation. Developing countries like Kenya (Policy Paper for the Infrastructure Sector in Kenya), Vanuatu (Andeng, Infrastructure Country Report) and Latin American (Berg, Infrastructure Management: Applications to Latin America) countries are also paying attention to infrastructure management policy. Even in India (Rafeeqi et al, 2003), the Ministry of Transport and Railway has issued procedural orders on the subject and has also evolved standard formats since 1970.

#### 5. Why Policy?

In order to preserve and make efficient use of huge amount of tax payers' money and foreign loans in demolishing and building it is about time to devise a policy for development and life cycle management of valuable infrastructure. Federal policies play an important role in coordinating the development and

management of the nation's infrastructure. Federal programmes are important sources of infrastructure financing for states and local governments. In some cases federal programmes provide and operate facilities directly. In other instances, as in discretionary programmes or demonstration projects, federal agencies approve planning for projects to be undertaken and operated by other governments. Thus, federal grant conditions – both for eligibility and amounts of aid – influence infrastructure development and management as clearly as do project choices in direct investment programmes.

## **6. Policy Objectives**

Major policy objectives in regard to infrastructure are:

- to develop a proper understanding of the nature of infrastructure that demonstrates why infrastructure is different from other forms of capital investment
- to ensure that the importance of continuous improvement of infrastructure is widely recognized and that adequate expenditure on infrastructure is forthcoming
- to enable Pakistan to take advantage of technological change in all areas related to infrastructure and to ensure that productive innovation is introduced as rapidly as economic circumstances permit
- to have it recognized that infrastructure is not just the province of the public sector and that the private sector has a major role to play in financing, designing, building, operating and maintaining infrastructure capital
- to encourage greater private sector involvement in infrastructure development by ensuring that the private sector is actively encouraged by governments to become participants at all stages of the infrastructure development and management process, most importantly by removing legislative and taxation obstacles to increased private sector infrastructure activity
- to ensure that all major infrastructure projects are subject to a proper cost-benefit analysis which takes into consideration all economic, social and environmental considerations
- to reduce the level of intrusive government regulations which raise the cost of infrastructure development while providing no additional safeguards or benefits to the community
- to ensure that proper control mechanisms on government infrastructure development are in place so that pressures are kept on governments to guarantee that they engage in value adding and profitable investment or that they are best able to attract productive investment
- to make certain that the problem of crown risk is taken into account by ensuring that there is a defined procedure for governments to identify and then manage infrastructure projects undertaken by the private sector
- to ensure that public spending on infrastructure is constrained by the need to maintain a budget surplus while keeping the level of public spending under tight control.

## **7. Principles of Infrastructure Policy**

### **7.1 The Policy Framework**

There is an optimal level of infrastructure investment, which neither crowds out more economically beneficial private sector investment in non-infrastructure projects nor is insufficient so that economic growth is impeded. It is, however, very difficult to ensure that infrastructure is at an optimal level since many such projects, if not all, are not subject to market disciplines and competitive forces. The ideal is that the marginal rupee spent on infrastructure will provide the same net economic benefit as the marginal rupee spent in other forms of investment. It is essential to recognize that infrastructure development must be balanced against other forms of investment.

Government expenditure on infrastructure can end up as politically driven rather than as providing the most economically advantageous outcomes. There are many motivations for building infrastructure, which are not based on a proper calculation of net economic benefit: electoral advantage, populism and constituency building being the most common.

Infrastructure development should not be seen as a form of economic stimulus independent of the economic benefits the development itself will create. There is, in particular, a danger that the chief aim of such spending is to create jobs or initiate apparent value adding activity even when it is recognized that the project itself is economically unsound.

There is a need to ensure that regulatory authorities do not shift the parameter of private sector involvement in infrastructure development once projects have commenced. There needs to be certainty for private sector infrastructure development, not just in terms of the original construction phase but also more importantly in regard to the maintenance and expansion of facilities. There has to be a clear prior understanding of the risk sharing arrangements, the return on investment, the role of regulatory agencies, the taxation protocols and the appeals process.

### **7.1.1 Public Sector Role**

There is a perennial role for government in developing a positive environment for efficient and effective infrastructure investment provided it is done in an open and transparent manner. However, government, in conjunction with the private sector, should implement processes which identify strategic opportunities and weak links in the economy to encourage further private investment. The current bias in public sector spending towards recurrent expenditure rather than capital expenditure needs to be reversed.

The underlying issue is that private sector involvement will only materialize if projects are commercially viable, or through subsidies to private sector providers, that they become profitable. Given that this must be the case, arguments can be made for establishing public-private partnerships to design policy initiatives to best meet the needs of business and communities. For example, public assistance can come in the following forms:

- ensuring a competitive market, including on-going microeconomic reform (reducing impediments from the adjustment processes of the market)
- the provision of re-training and education facilities that improve the skill base of the labour force, which is critical if new investment is to be attracted
- comprehensive domestic reform of workplace relations
- implementation of national competition policy and, in terms of external trade, better market access for private sector firms to improve economic efficiency
- the dissemination of timely, up-to-date information on profitable opportunities and programs and services available from government

### **7.1.2 Transparency and Accountability**

There are no obvious discipline or accountability checks on government to ensure that it engages in valued and profitable investment or that it is attracting productive investment. This is especially the case when government involves itself in the use of 'investment incentives' or 'industry assistance', such as tax breaks, and even cash subsidies, to attract investment from overseas. In the absence of detailed information about these 'behind closed doors' or 'commercial in confidence' deals to encourage certain infrastructure development, neither the Parliament nor the public is in a position to reach an informed opinion on the economic and social merits of such investment. Importantly, financial assistance that the Government provides to industry is often less than what is necessary to generate economic growth, but aims to create short-term unproductive jobs that would undermine economic strength and development.

### **7.1.3 Limited Resources**

All projects seeking a public contribution will be competing with other calls on public resources. While they may be very attractive when considered in isolation, they can only be undertaken at the expense of other government priorities. A positive benefit-cost assessment in itself, for instance, is not sufficient grounds for government assistance. The cost-benefit analysis needs to be conducted in terms of opportunity costs which may result in many infrastructure proposals not even passing the benefit-cost assessment in the context of other competing projects. Given the number of projects being proposed to governments and the extent of available funds, a decision to grant assistance to a project is always at the same time a decision to deny assistance to other projects. Exercising judgments and choices about resource allocation is extremely important, particularly when excessive government expenditure runs the risk of crowding out valued private sector investment. Moreover, an inappropriate investment results in a fall in the available pool of investment funds, increasing the cost of accessing funds for potential investment. Capital markets may end up stretched by an over-extension of infrastructure projects with the result being the higher rates of interest necessary to allocate resources between competing uses.

### **7.1.4 Changing Economic Structure Fostering Private Sector Involvement**

Technological change and market development occurring in the Pakistan economy has allowed the introduction of competition into monopoly infrastructure markets. This is a slow and gradual process and will take some time before this process matures. Now, Pakistanis are becoming more familiar with 'user pays' concepts, that is, more accepting of tolling and other direct charges for service previously provided free to users. This change in community attitudes has allowed governments to engage the private sector in infrastructure development that may not otherwise have occurred.

Not only is investment crucial but also the efficiency of its operation, particularly if performance productivity is to be improved. Having to deal with public concern and pressure, governments may participate in inefficient investment, which only serves in driving up costs and stifling potential valued private investment. The involvement of the private sector with its expertise and commercial judgments is seen as a way to improve the efficiency of future infrastructure investment, leading to improvements in infrastructure service provision and real price reductions to consumers.

It is, therefore, essential that a proper code of conduct is developed by governments specifying the approach governments will take in terms of risk sharing and the protection of intellectual property rights. Private sector initiated projects, which do not involve public sector outlays should be facilitated. Indeed, the public sector should be moving towards facilitation of infrastructure projects by the private sector rather than remaining providers.

### **7.1.5 Issues in Attracting Investment Capital**

Institutional investors may be viable source of infrastructure funding provided certain conditions are met:

- the need for an income flow that provides a satisfactory and reasonably secure rate of return, and
- that the capital value of projects justifies the costs of the feasibility studies and increases the likelihood of gaining institutional partners to spread the risk.

The Federal Government has recognized the difficulties associated with attracting domestic and foreign investment within Pakistan and as part of its reforms program is promoting venture capital investments in Pakistan. However, the Government needs to be cautiously aware of the fact that local and foreign investments should be somehow balanced because foreign investment companies take their own money and also demand the interest of loans. Consequently, the country usually saves nothing but the infrastructure that is used in the long run.

## **7.2 Policy Enforcement Mechanism**

It is envisaged that, at the stage of approval of the project, the Planning Commission should ensure that a comprehensive management system for the physical infrastructure is embedded in the initial proposal with provision of adequate funding. The parent department should be made responsible for developing a management system and during the stages of development of the project; the Planning Commission should check the provision of the management system.

## 8 References

- Andeng, A. "Infrastructure Country Report Vanuatu", pp 10-11
- Barakat, S; Jin, G; Lemay, M; Wells, W; Félio, G and Langelier, M. "Civil Infrastructure Systems Technology Road Map 2003–2013", pp 48-49
- Berg, S and Corton, ML. "Infrastructure Management: Applications to Latin America". Public Utility Research Center, University of Florida, pp 22-23
- Clough, P; Duncan, I; Steel, D; Smith, J and Yeabsley, J (2004). "Sustainable infrastructure: A policy framework". Report to the Ministry of Economic Development, pp 85-86.
- Enserink, B. "Stakeholder management in infrastructure planning - the Dutch experience".  
[http://www.asfinag.at/umwelt/files/l\\_bild\\_id\\_606.pdf](http://www.asfinag.at/umwelt/files/l_bild_id_606.pdf)
- Penner, Rudolph G. (1986). "Federal Policies for Infrastructure Management, CBO Study".  
Congressional Budget Office, Congress of the United States, Washington DC, pp 126-127.
- Rafeeqi, SFA; Lodi, SH; Khan, RA. "Bridge Database Management System". CITC-II, December 2003, Hong Kong.
- "A Policy Paper for the Infrastructure Sector in Kenya". Presented by the Infrastructure Committee of the Nairobi Stock Exchange
- "International Infrastructure Management Manual", Version 2.0, Australia/New Zealand Edition – 2002, Association of Local Government Engineering New Zealand Inc. and the Institute of Public Works Engineering of Australia, pp. 8-9
- "Public Sector Development Programme 2000-01". Planning Commission, Gov of Pakistan, June 2001
- "Public Sector Development Programme 2001-02,". Planning Commission, Gov of Pakistan, June 2002
- "Public Sector Development Programme 2002-03". Planning Commission, Gov of Pakistan, June 2003
- <http://www.niscc.gov.uk/niscc/index-en.html>
- <http://www.pakboi.gov.pk>