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India Water Week 2012 – Water, Energy and Food Security : Call for Solutions, 10-14 April 2012, New Delhi

INVESTING IN THE WATER SECTOR ACHIEVEMENTS OF THE PAST AND CHALLENGES FOR THE FUTURE[1]

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ACHIEVEMENTS OF THE PAST AND EMERGING ISSUES

The significance of prioritizing investments in development and management of water resources as a crucial driver of economic growth and social development in India was recognized long before the country got independence in 1947 and started the planning era in 1950-51. Governments both during the colonial period and after independence gave special emphasis on investing in the water infrastructure - storage, transmission, management and use of water. These investments in different types of hydraulic infrastructure - large or small, surface or ground, single or multipurpose - have generated substantial direct and indirect benefits for millions of farmers; agricultural workers; rural and urban population; cottage, small and large industries; hydropower generation; and environment all over India. Direct impacts of these investments have been in terms of the value of additional output of agricultural commodities, hydropower generated, water supply for households and industries and reduction in incidence of droughts and floods. Indirect and induced economic impacts have been sizable due to strong inter-industry linkages resulting in increased demand for outputs of other sectors and higher non-farm incomes. The poor have benefited hugely from such investments. The incidence of poverty in irrigated districts is one third of that in un-irrigated districts.

Given that irrigation is the major user of water in the country, most of the efforts directed at development and management of water resources in the initial phases emanated principally from the needs of water requirement for agriculture. Further since most of the medium and large water resources projects were multipurpose in nature, a large part of the demand for water from other sectors was subsumed in them. Water resource development and management in India was therefore often used synonymously with irrigation development and management. While this scenario continues to hold true largely, however over the years the nature of demand for and supply of water has undergone significant changes. The demand for water from different sectors of the economy has increased substantially. New concerns relating to environment, water pollution and climate change with strong implications for water sector have gained momentum.

Concurrently the nature of water economy itself has undergone substantial changes. The focus on development of water resources has shifted from surface water to groundwater. Within surface water the focus has increasingly shifted from reliance on major and medium projects to minor and small scale decentralized structures with strong implications for augmenting to the available water storage capacity and in enabling exploitation of synergies of large multipurpose projects. Over exploitation of groundwater in several parts of the country has led to steep fall in water tables raising concerns over resource sustainability. The net result has been that demand for water has outpaced the supply. All these changes haveconfounded further the development and management challenges facing the water sector and in improving water use efficiency.

The growing water scarcity in the face of rising demand for water from different sectors of the economy coupled with factoring in of newer concerns relating to both nature and form of development of water resources and pattern of usage, have influenced both the quantum of financial resource required for the sector as also the allocation of available resources between different purposes and uses. This also has had strong implications for the sources of finance for the sector. The availability of financial resources have not however kept pace with the

[1]Key Note Address, India Water Week, New Delhi, April10-14,2012
[2]The author would like to thank Upasana Sharma for research assistance.

fast rising financial requirements of the sector resulting in a large financial 'gap' with resultant implications for the development and management of the water sector, in particular, and economic growth in general.

ASSESSING THE FINANCIAL 'GAP'

Attempting to make an assessment of the 'gap' between actual level of spending and financial requirements of the water sector is problematic due to lack of a comprehensive information base. Monitoring of investment and financing issues in water sector is a complex undertaking. Investments in development and management of water resources are made by a number of stakeholders – different Ministries/Departments of central and state governments, private sector, farmers, NGOs and many other stakeholders. The finances for these investments also come from a variety of sources- government's own budgetary resources, user contributions , borrowings from both domestic and foreign multilateral and bilateral agencies, from private savings, private sector, other stakeholders etc. While some of these investments are directly for the water sector *per se*others come loaded on multi objective programs as in agricultural or social (MGNREGA) sector. Some of these investments are in the nature of expenditure on works/equipment etc, some are in the form of subsidies intended to encourage complementary investments by other stakeholders and/or in making water services affordable for the farmers to use. Some investments are on a regular and continuing basis others are in the nature of ad-hoc expenditures. It is difficult to segregate the available data in to investments for development of water as a resource and for provisioning of water as a service. Different agencies follow different accounting procedures which further complicate compilation of uniform data.

As with the monitoring of current level of financial spending in the water sector there are similar concerns in determining the future financial requirements for the sector. The available estimates of financial requirements for future investments are based on some broad assumptions of the past trends than on any sophisticated estimation methodologies. Discussions about the evaluations of the financial requirements of water sector have generally tended to be dominated by investmentneeds of the new physical infrastructure. An important and perhaps the largest element of the cost of water resources management is the cost of rehabilitation and maintaining the existing infrastructure which over the years has been neglected and on which huge financial investments have gone in to building are not accounted for.

Notwithstanding the absence of a comprehensive data base on current level of spending, future financial requirements and contributions of different sources of funding to the water sector there is enough evidence to corroborate that the supply of finances for the water sector has not kept pace with the demand. As a result the sector has been facing a major financing gap.

TRENDS IN INVESTMENT

Recognising the constraints on availability of a comprehensive data base on financial aspects of the water sector, it is well known that on the 'supply side' there are principally three sources of financing—tax revenues, user contributions through tariffs, and transfers through grants and borrowings from bilateral and multilateral donors. The available data base on combined financial allocations for major, medium and minor sources of irrigation by the central and state governments over the years is quite comprehensive and enables analysis of indicative trends in financial allocations by the government, the largest investor of the water sector in the most important component of water. An analysis of the available data shows that while in absolute terms the financial allocations by the government for the sector has been increasing, however the financial allocations as a proportion of total budgetary expenditure have been falling steeply (Figure 1). The available data on cost recovery from users for use of water services also shows that there has been a steep decline in proportion of O&M cost recovered by way of user fees for different services –not only for irrigation but also for urban and rural water use. The available data on financial resources available from multilateral development agencies forinvestmentin the sector donot show any consistent trend.

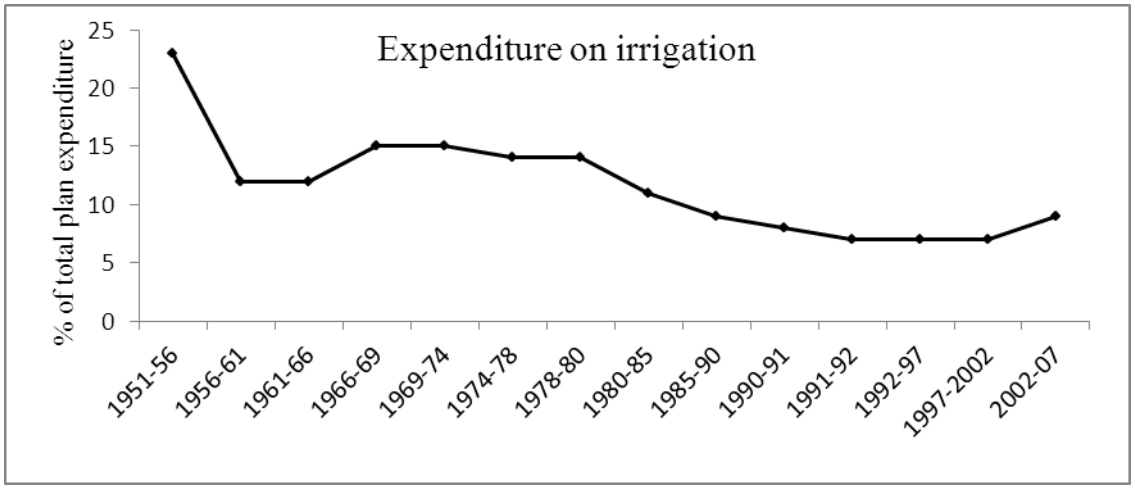

Figure 1:Trend in proportional expenditure on irrigation

CHALLENGES FOR THE FUTURE

The net result of falling budgetary allocations to the water sector, steeply declining payment by users of water services and dwindling nature of finances available from donors, has been a widening of gap between availability of finances and that required for the sector. There are no magic bullets available to improve financing of the water sector.The large and growing financial gap can only be bridged by a combination of methods which include greater allocations of budgetary resources, greater contributions from water users and investment from the private sector, combined with more efficient allocation and use of the available financial resources. Given that any major shifts in availability of financial resources, more so from larger budgetary allocations or through increase in user fee, will be difficult to achieve in the short to medium term, an important option towards narrowing down of the financial gap is to explore opportunities for more efficient utilisation of available public financial resources through careful evaluations of the trade –offs involved, better and coordinated sectoral planning, and shedding- off of the 'silo' based approach for financialallocations. Fortunately the Indian water sector offers considerable scope for improved usage of available financial resources The basic principle in allocation of resources should be to ensure that the resources are allocated in a manner where they can achieve the biggest impact.

Several opportunities worth evaluating exist. How should we be allocating financial resources between building new infrastructure and maintenance of the existing one; allocating money on building multipurpose projects vs single purpose projects; allocating money between building large structures and small structures (like tanks, watershed programs etc); spending money on creating new infrastructure or improving the management of existing ones; spending money on improving water availability in already irrigated areas or making water available to hitherto unirrigated areas? What could be an optimal allocations and prioritization policy and what are the trade-offs involved? What is an appropriate methodology to evaluate these options?

While available economic tools can to a large extent enable policy makers to evaluate these options, unfortunately economic and financing issues have often not been mainstreamed in the decision making framework of the water sector in India. The development, research and policy agenda in the water sector has been dominated by political, technological, institutional, environmental and to some extent certain social concerns. In a scenario of unrestrained availability of financial and water resources the implications of relegating these issues to the background may not have been that apparent, however when resources are severely constrained the implications of not taking on to consideration these issues in decision making could be substantial.in terms of prioritization and allocation of available resources, and in using the available resources more judiciously and efficiently.

ILLUSTRATING BENEFITS OF RESOURCE ALLOCATION: INVESTING IN BUILDING NEW VS MAINTAINING EXISTING INFRASTRUCTURE

We illustrate how consideration of trade-offs could provide useful insights in to decision making. In deciding on allocation of a given amount of available financial resources between investing on development of new water resources vs spending on maintenance of existing infrastructure, the general preference of the governments is to

pay excessive emphasis on capital investments in development of new projects as these investments not only contribute to achieving higher economic growth but also have high visibility and possibly high political pay offs. This preference scenario however overlooks the fact the contribution of infrastructure to growth depends not only on the stock of infrastructure available but also on how efficiently and effectively the available infrastructure is used. More public investment in building infrastructure can have negligible growth impact if effectiveness is not improved. An ill maintained and ineffective infrastructure is costly to the society in terms of loss of potential output. Returns to satisfactory maintenance include the value of saved output, postponement of new investment to rehabilitate infrastructure and better equity of supply as well as intangible social and environmental benefits.

This is best illustrated in Figure 2 which shows returns to investment in creating new vs maintenance of existing infrastructure at different stages of growth.Global experience shows that the returns to investments in water infrastructure and management follow the broad outlines shown in Figure 2. During the first development stage, the challenges are predominantly engineering in nature. As an infrastructure platform is built, the 'Type 2' and 'Type 3' challenges of maintenance, operation, and management start to emerge. The Indian state water apparatus still shows little interest in the key issues of the maintenance and management stage as a result of which there is an enormous backlog of deferred maintenanceand this has pattern of resource allocation has been aptly described as 'Build-Neglect-Rebuild'. There is a need to address the problem of poor maintenance in a more pragmatic manner rather than fretting over the fact that cost recovery is dismal in these schemes, which is no doubt a big contributor to problem of deferred maintenance

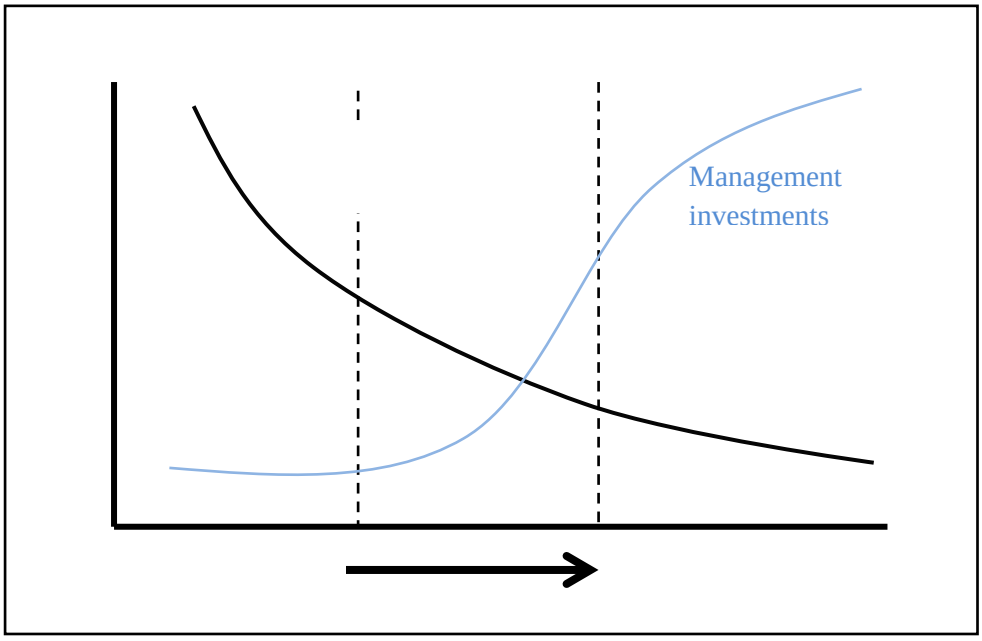

Figure 2: Returns on Investment
Source: The World Bank

SUMMING UP

Our purpose in this paperwas to draw attention of the investors and policy makers to some of the challenges the Indian water sector faces in financing the development, management and more efficient utilization of the available financial resources for the water sector. While there is a need to encourage commitment of larger financial resources for the sector by all the existing stakeholders, more so by the governments through budgetary outlays, new and innovative financing solutions will need to be evolved to supplement these efforts. Concurrently more efficient allocation and utilization of available financial resources through a careful evaluation of trade-offs and impacts and mainstreaming of these concerns in the decision making framework can not only help draw a roadmap for future development of water sector but also equally important for continuing to realize the gains of investments already made in the sector. For moving in this direction we suggest formation of a Water Economics and Finance Group, to ensure a cadre of researchers and practitioners with the skills and tools to improve economic and financial analysis of project design and implementation.