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Private Sector Participation in Financing and Managing Surface Irrigation

Chasing A Mirage?¹

S. J. Phansalkar²

1. Introduction

The net sown area in India is estimated at 142 million hectare (mha.). Surface water irrigation potential of 43 mha. was created by the end of 1994 while a potential of 41 mha. under ground water irrigation was created. (National Commission for Integrated Water Resources Development (NCIWRD), 1999) of which 31 and 38 mha. respectively were actually utilized. The ratio of the gross irrigated area (GIA) to the gross sown area (GSA) thus stood at 32 per cent by 1994. India had created a storage of 174 billion cubic metres (BCM) by the end of that year and another 76 was under construction at the time. The net sown area has nearly reached its physical limit in the country and as the population rises and the demand for food and agricultural commodities grows, there is no option but to increase the irrigated area. The ratio GIA/GSA has to reach the levels of 40, 45 and 52 per cent by 2010, 2025 and 2050 respectively to meet the food demand.

This requirement means a huge net addition to the irrigation potential. There has been a phenomenal growth in new ground water capital (wells/tube wells and pumps) in the country. Shah estimates that nearly a million such tube wells are added to the

¹ This is a pre-publication draft. The author has benefited from and is grateful for the comments received on the preliminary draft of this paper and the seminar he gave on this subject at IWMI-Tata Water Policy Programme on August 3, 2005.

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existing 21 million stock each year and the "ground water juggernaut shows no sign of slowing down!" (World Bank, 2005). A bulk of the investment in the ground water assets is privately funded (Mukerji and Shah, 2003). In any case, the investment in ground water irrigation infrastructure occurs in such a completely decentralized and almost uncoordinated manner that it is seldom thrown up as an instance of the crisis of the investment ability. In that respect it differs sharply from the investment problem of the surface water infrastructure.

An estimate of the necessary infrastructure is an extra storage of 178 BCM with an associated huge addition to the distribution network (NCIWRD, 1999). A broad estimate of the investment needed for creating such huge storage and distribution infrastructure was given at Rs. 5,60,000 crores by the Task Force on National River Linking Project (NRLP). This excludes such investments as are necessary for maintaining the ageing and often poorly maintained existing assets (World Bank, 2005). Quite admittedly, the river interlinking project is not yet a reality and hence talking of that as a pointer to investment may not make a convincing argument. But even in the absence of the interlinking project, large sums of monies are required for implementing the irrigation schemes proposed by the various states.

For instance, Maharashtra would need to invest a whopping Rs. 30,000 crores for completing the development of the water resources deemed feasible in Maharashtra. (Report of the Water and Irrigation Commission, Mumbai 1999, Chapter 16). Maharashtra's tax revenue was Rs. 39,737 crores in 2004-05 (Report of the Eleventh Finance Commission, Annexure V. 23, p. 210). Thus the required investment is nearly three-fourths of a full year's tax revenue for the state. The difficulty in finding government resources for making these investments is obvious.

Nor is it quite so easy to borrow for the purpose of making these investments. In 2004-05, Maharashtra had an interest burden of Rs. 6,803 crores (Eleventh Finance Commission, op cit), interest liability amounting to a little over 15.5 per cent of its tax revenue during the five year period 1995-99. Repayment of principal amounts of these debts is yet another burden. Adding further to the debt servicing requirements would be quite ruinous to the

health of the state finances. What is of most Indian States. Interest payment revenue, is smaller than this level of Indian States (Tamil Nadu, Karnataka) (Eleventh Finance Commission, Annexure V). The situation of most Indian States would be worse than that of Maharashtra.

Can the states tap the private sector for investments? This was once viewed as a possibility of financing (Gulati and Raju, 1999). Maharashtra, among the other Indian States, has looked for funds from the market for funding irrigation infrastructure from 1998-2002. Partly to avoid showing high interest rates on the balance sheet and partly to bring in greater liquidity, the state had created special purpose vehicles in the form of Water Development Corporations. Maharashtra set up five such corporations. These corporations raised money from the market at the prevailing market rates. The bond yields were higher than the state. However, the market became saturated with the tranches of bonds issued by the various Water Development Corporations and credit rating agencies were reluctant to rate them (see for instance CRISIL document on Maharashtra Vidarbha Irrigation Development Corporation, Phansalkar and Jagdeo, 2003). The difficulty was either swapping the high interest rate with lower interest rate or seeking agreements from bond holders to reduce the interest rate. This is well known. With high interest liability and low ratings, market borrowing is not easy.

Thus neither are the states in a position to invest in irrigation from their own resources nor are they in a position to raise it from the market. Yet an option must be created. External multi-lateral agencies are an option with a willing and eager lender. Maharashtra has quadrupled its annual lending to the water sector. These volumes are adequate to cover the interest but not talking of raising the lending to US\$ 100 million (US\$ 100 crores per year) nor are they free of principal costs. Hence there is an urgent need to broaden the sources of the investment.

year and the "ground water going down!" (World Bank, 2005). Ground water assets is privately owned. In any case, the investment in infrastructure occurs in such a completely undisciplined manner that it is seldom a crisis of the investment ability. It is from the investment problem of

infrastructure is an extra storage huge addition to the distribution road estimate of the investment huge storage and distribution Rs. 5,60,000 crores by the Task Force Project (NRLP). This excludes such as for maintaining the ageing and water assets (World Bank, 2005). Quite a big project is not yet a reality and the delay to investment may not make a difference in the absence of the inter-linking projects required for implementing the projects in the various states.

States would need to invest a whopping Rs. 10,000 crores for the development of the water infrastructure in Maharashtra. (Report of the Water Task Force, Mumbai 1999, Chapter 16). Maharashtra has Rs. 39,737 crores in 2004-05. The Eleventh Finance Commission, Annexure V. 23, p. 10. The investment is nearly three-fourths of a full investment. The difficulty in finding government investments is obvious.

States borrow for the purpose of making infrastructure. Maharashtra had an interest burden. (Finance Commission, op cit), interest is 15.5 per cent of its tax revenue in 1995-99. Repayment of principal is another burden. Adding further to the interest payments would be quite ruinous to the

health of the state finances. What is true of Maharashtra is true of most Indian States. Interest payments, as a proportion of tax revenue, is smaller than this level of 15.5 per cent only for three Indian States (Tamil Nadu, Karnataka and Madhya Pradesh) (Eleventh Finance Commission, Annexure II.5). Thus clearly, the situation of most Indian States would be similar if not far worse than that of Maharashtra.

Can the states tap the private debt market for making these investments? This was once viewed as an innovation in irrigation financing (Gulati and Raju, 1995). They certainly tried. Maharashtra, among the other Indian States had raised money from the market for funding irrigation investments in the years 1998-2002. Partly to avoid showing high debt on its own balance sheet and partly to bring in greater business discipline the state had created special purpose vehicles in the Irrigation Development Corporations. Maharashtra set up five such corporations. These corporations raised money from the market by issuing bonds at the prevailing market rates. The bonds were guaranteed by the state. However, the market became weary when subsequent tranches of bonds issued by the various Irrigation Development Corporations and credit rating agencies started downgrading them (see for instance CRISIL downgraded bonds issues of Vidarbha Irrigation Development Corporation as narrated in Phansalkar and Jagdeo, 2003). The difficulties faced by Gujarat in either swapping the high interest rate Narmada bonds or in seeking agreements from bond holders for their early maturity are well known. With high interest liabilities and plummeting credit ratings, market borrowing is not easy.

Thus neither are the states in a position to find money to invest in irrigation from their own revenue nor are they in a position to raise it from the market. Yet an irrigation infrastructure must be created. External multi-lateral aid can of course remain an option with a willing and eager World Bank that plans to quadruple its annual lending to the water sector. However, neither are these volumes adequate to cover the full need (the Bank is talking of raising the lending to US \$ 800 million or Rs. 3,300 crores per year) nor are they free of political, social and financial costs. Hence there is an urgent need for considering options at broadening the sources of the investment funds.

2. Conceptual Issues in Irrigation Financing

The Indian State is in a difficult financial situation and cannot find money to invest in irrigation. The whole tone of the discussion on irrigation financing is one of helping the State in a difficult situation. But should this be the case? We need to understand clearly whether the State ought to be investing in irrigation at all and if so in which components of the irrigation projects and for what reasons. Merely because the State had invested in the irrigation infrastructure in the past does not mean that it ought to be doing so forever. Similarly, merely because the investments in the surface irrigation infrastructure are chunky and beyond the capacity of the private investors, that does not imply that the burden rests logically with the State. We need to understand the nature of the investment, its risk profile and the profile of the stream of benefits it creates in order to come to a focused conclusion and then, go on to suggest ways of finding feasible means of generating resources. The task is attempted in this section. The reasons why surface irrigation infrastructure is deemed fit for public investments are listed below:

Reason 1: The Ownership of the Resources Vests with the State:

The State owns the surface water resources. Individuals and groups have an easement right over the flow in the streams to which they are riparian, but the ownership rests with the State (Chhatrapati Singh, 1991). Similarly, the ownership of the forest or the revenue wastelands on which much of the infrastructure is to be located also vests with the State. It is not legally easy nor socially or politically simple for the State to assign/lease its rights away to private parties on water resources or forest lands, as recent events such as the Janmabhoomi case in the case of forest lands in Andhra Pradesh or the Sivanath river case in Chhattisgarh, demonstrate. Even if eventually the State may be able to create rights in these resources at the hands of the private investors, the process is expected to be tedious and legally problematic, thus massively increasing the risk perception.

Reason 2: Allocation of Resources:

Dams and canals create an allocation of scarce economic resources in different regions, a task, which is only possible if someone other than the market forces, who else but the State can perform this task. For example, a check dam (that benefits tribals) is built in the reservoir of a dam that benefits farmers. This deliberate allocation of resources is a choice of expending tax or non-tax resources, which affects the rights that are enjoyed by different groups in a fundamental way.

Reason 3: Lumpy Investments, Long Time Periods:

The investments needed for surface irrigation are truly massive. Historically, the cost of a dam averaged some Rs. 17,000 per hectare of irrigated area. Even then, in more "difficult" areas, because of paucity of rain or topography, the cost in Maharashtra and Gujarat, the cost was even higher than that level. More recently, the cost of a dam is 100 lakhs per hectare of the designed area. For example, a design command of 10,000 hectares requires 130 crores. The time that elapses between the start of a project and its completion takes several years and perhaps in a few large dams, decades.

Reason 4: Generation of a Common Good:

Surface irrigation assets create a common good, which is essentially public goods. This is viewed as an economic good which is consumed or benefit derived by all. The benefits that can accrue from a dam are as follows (as per the report of the Commission on Water and Power, Chapter 16, GoM, 1999):

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Reason 2: Allocation of Resources:

Dams and canals create an opportunity for deliberate allocation of scarce economic resources between groups of people and regions, a task, which is only in the ambit of the State. For instance, who else but the State can prevent the upstream construction of a check dam (that benefits tribals) because it would reduce inflows in the reservoir of a dam that will help the people in the valley? This deliberate allocation of natural resources goes far beyond the choice of expending tax or non-tax revenues for development and affects the rights that are enjoyed/enjoyable by the people in a fundamental way.

Reason 3: Lumpy Investments, Long Gestation and Longer Payback Periods:

The investments needed for creating surface water infrastructure are truly massive. Historically, till the Sixth Five Year Plan they averaged some Rs. 17,000 per hectare of the design command area. Even then, in more "difficult" (in the sense of the combination of paucity of rain or topographic conditions) states, such as Maharashtra and Gujarat, the investments were nearly double of that level. More recently, the figures have gone up to over Rs. 1.3 lakhs per hectare of the design command area. Thus a dam with a design command of 10,000 ha. needs a gross investment of Rs. 130 crores. The time that elapses between the conception of the project and its completion tends to be long, running to several years and perhaps in a few unfortunate cases like the Narmada dams, decades.

Reason 4: Generation of a Combination of Private Goods and Public Goods:

Surface irrigation assets create some private goods but mainly, essentially public goods. This is so even when water for irrigation is viewed as an economic good, to be priced in relation to volume consumed or benefit derived thereof. The types of benefits that can accrue from a dam are as follows (adopted from the Report of the Commission on Water and Irrigation (Chitale Commission), Chapter 16, GoM, 1999):

Private Goods are:

- Facilitation of cultivation of crops in the second and the third season in the command area;
- Production of electricity where the hydro-electric project facility is a part of the project;
- Production of fish in the reservoir;
- Supply of water for domestic and industrial purposes to nearby townships/industrial estates; and
- Creation of recreational possibilities in the reservoirs and in the gardens on the embankment.

Public Goods are:

- Avoidance or significant mitigation of floods in the down stream areas and hence avoidance of consequent loss to life and property;
- Avoidance of famine-like conditions and consequent acute distress to a mass of population by creating the potential for providing protective irrigation to staple crops;
- Avoidance of acute distress arising out of paucity of water in dry seasons as the stored water can and often is used for the supply for drinking purpose to human settlements;
- Accretion in ground water storages arising out of seepage of surface water and return flows; and
- Generation of employment as a result of direct effect on double cropping as well as indirect, secondary and multiplier type effects.

It is not possible and certainly not desirable to even remotely "privatize" at least the famine and flood and drinking water distress avoidance benefits of the surface water infrastructure. Technically it is difficult to measure and value the ground water accretion. And economically it is difficult to measure and attribute the second order economic effects.

The infrastructure also generates "bads" (negative externalities); again some accrue to individuals and some remain as public bads. For instance, water logging results in driving a lot

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certainly not desirable to even remotely estimate and flood and drinking water quality of the surface water infrastructure. To measure and value the ground water it is difficult to measure and attribute the effects.

also generates "bads" (negative impacts) to individuals and some remain water logging results in driving a lot

of land out of agriculture. There is land submergence forcing communities to abandon their habitation and losing their livelihoods. There are negative ecological consequences as well. Also, a point no engineer would like mentioned is that while dams generally reduce the incidence and frequency of seasonal floods in downstream areas, they also create small but ever present possibilities of huge flash floods when their walls give way (due either to excessive inflows or earthquake, et cetera) as it happened in Morbi or more recently in Digras in Maharashtra. More frequent and less dramatic perhaps are the dislocations caused when the dam waters are released as a preventive measure fearing excessive inflow in the reservoir.

Since the investment is bound to create these public goods and "public bads", it is arguable that the investments must be made by the public agency. It may be noted that even if tomorrow the consensus emerges for allowing the private sector to participate in the irrigation projects, there is a hitch in terms of the way the projects are assessed and the way the water charges are levied as is discussed below:

3. Assessment of Feasibility and Fixation of Water Charges:

The question as to when should a dam or some other irrigation infrastructure be deemed techno-economically feasible evokes thinly veiled, ideologically rooted answers. The "purely commercial" viability of the project would mean the assessment of Net Present Value or Internal Rate of Return in the way the finance theory suggests. The mechanics of the calculation is simple, but the logic behind them is not so. Who is the project holder here? To whom do the benefits accrue? To start with, if one assumes that it is the State which is investing in the project and that, it is doing so on behalf of society, then one raises a different set of questions than if one were to assume that the investor is a private investor investing on his own behalf and looking for economic returns.

If the investor is seen to be a profit seeking private sector investor, then he would wish to price the products of his project,

namely water supplied for electricity production, for irrigation and for domestic/industrial application, with clear intent. He would wish to cover all the Operations and Maintenance (O&M) and establishment costs from the sale of water to its users and expect a market rate of return on his investment. In fact, he would derive the price of water from his assessment of O&M and establishment costs and his expectation of the return. Alternately, he would consider the project commercially viable if he expects to get the benchmark rate of return when he charges the "most practical" price for water. Basically, the purely profit seeking private sector investor is unlikely to be swayed by the public goods of avoidance of famine or avoidance of distress caused by the drinking water crisis.

In India, the State justifies the irrigation projects chiefly from the public goods they create. The First Irrigation Commission explicitly recommended in 1901 that the level of investment in an irrigation project should be assessed to be reasonable by relating it to the "famine relief expenditure the State would have to incur if the project were not implemented".³ The view was tenable principally because it was the Commission appointed by a Colonial Government. The Second Irrigation Commission appointed by the Government of India after Independence talked of benefit cost ratio as the guiding criterion and pegged the cut-off at 1:5. The benefit is to the farmers and the cost is to the State. It also suggested that the water rates should be linked to the benefits received by farmers and not to the cost of implementing the irrigation project.⁴

³ "The Commission took into consideration such factors as the estimated total cost of famine relief works in a tract for the preceding 25 years; the population of the tract; the per capita area, which should be protected by irrigation, and the area already protected. After weighing these factors, it concluded that the Government should be prepared to face an expenditure equal to three times the future annual cost of famine relief and remissions of revenue, for the sake of preventing famine altogether. According to the Commission, protective works could be sanctioned, without hesitation, when the capital cost was not likely to exceed thirty times the net revenue, or whenever a net return of three per cent on the actual outlay could be anticipated."

As expected, the criteria for fixing water charges have been based rather than economic decision-making. This is a dubious economic logic and is based on grounds such as "extraordinary" (Phansalkar, 2003). The government has provided numerous instances of public services to the public, but has not been able to recover the costs. In the case of water charges, the government has not been able to recover O&M and establishment costs of projects in most of the States. The total cost of schemes during 1995–2000 (total investments) was Rs. 594 crores while the expenditure (of Rs. 121 crores. Most other investments from irrigation schemes (Tenth Finance Commission III.7). The maintenance cost of Government amounted to Rs. 9,891 crores for projects and Rs. 9,891 crores for the period 2000–2005 for the Eleventh Finance Commission.

⁴ "The Commission supports the view that in sanctioning projects, the return of the projects should be considered. The Commission wishes to emphasize that in accepting projects only if it is a prudent precaution. The Commission wishes to emphasize that the rule should be relaxed in the case of affected areas where a large population is affected. The Commission wishes to emphasize that for the implementation, it must be based on technical considerations and not on political considerations. Essentially, the value of the project should be reviewed and re-evaluated from the irrigator's point of view. The Commission should be reviewed and re-evaluated every plan. (See abstracts of the Commission's report on the website <http://wrmin.nic.in>)"

V.7) This is despite the fact that there have been numerous Committees and Commissions that have recommended that water charges must not only recover O&M and establishment costs but also contribute some return on investment.⁵

4. Basic Requirements of the Private Sector Participation in Infrastructural Investments

It is important to understand the basic requirements that need to be fulfilled before the private sector considers investment in infrastructure. Only when such requirements are met, can one proceed to "structure the deal" to make the investment opportunity attractive to the private sector. There has been significant discussion on when Public-Private Partnerships (PPP) work. Some of the conditions deemed necessary for PPP to work are:

- A general move to shift from input based contracting to output based contracting in the sphere of public services and infrastructure;
- Changes in procurement processes, procedures and instruments that reflect the above shift;
- Clear legal structure and due diligence to cater to contractual issues, define scope and limit of PPP and its implementation and the basic scope for long term financing;
- Creation of a sound and functioning regulatory framework including laws and institutions for regulations; and
- Macro-economic and macro-political stability.⁶

Some of these trends are visible in India in sectors such as telecom and highway construction. The extent to which these conditions can be created in the water sector is moot. So far we only have the negative history of PPP in the water sector, the most celebrated case being the abortive attempt to bring in a PPP in urban water supply in Pune, Maharashtra. The above paper also

⁵ For instance, the Vaidyanathan Committee on Water Pricing recommended in 1994 that water charges to be fixed so as to recover O&M costs and give 1 per cent return on the investment.

⁶ See for a detailed discussion Pengabbean (2005).

mentions the need for creation of assets to become pro-poor but it is not clear if these assets are a fit case of natural monopolies. It is difficult to envisage. For instance, the legal structure is not clear. The greatest difficulty would have inter-state implications in a state situation of water demand and there appears no encouragement for condemning the arrangement in any way, one can state that in the absence of macro-political conditions, private sector involvement in the

It is to be noted that regarding the urgency of national importance, etc. the issues listed above is a serious private sector action. State Governments will need to be seen.

We proceed to explore how infrastructure can be structured for private sector investors, assuming that the above are tricky and contentions.

5. Areas in Which Private Sector Participation is Possible

The initial section of this paper discusses the possible private sector involvement in irrigation management. A detailed discussion on private sector participation in irrigation

⁷ See Patkar and Aravinda "The Role of Private Sector in Water Supply", 3, 2002 among other instances. The move to "privatize" a 23 km stretch of water supply to the government. The move has been approved by the government.

It there have been numerous have recommended that water M and establishment costs but investment.⁵

Private Sector Participation in

Basic requirements that need to be met for a private sector considers investment in water infrastructure. If requirements are met, can one make the investment opportunity. There has been significant Private Sector Partnerships (PPP) work. Some reasons why for PPP to work are:

• Output based contracting to output based contracts for public services and

• Streamlined processes, procedures and

• Careful diligence to cater to contractual requirements of PPP and its implementation

• Innovative term financing;

• Strengthening regulatory framework

• Standards for regulations; and

• Political stability.⁶

• Example in India in sectors such as power, telecom, etc. The extent to which these issues in the water sector is moot. So far we have seen PPP in the water sector, the most common attempt to bring in a PPP in the water sector is in Maharashtra. The above paper also

mentions the need for creating a competitive environment for PPP to become pro-poor but it would appear that the surface irrigation assets are a fit case of natural monopolies and hence competition is difficult to envisage. There are other difficulties as well. For instance, the legal structure surrounding irrigation is far from clear. The greatest difficulty arises in the case of projects that would have inter-state implications. As is well known, the inter-state situation of water dispute resolution in India is unsettled and there appears no end to the fluidity. Without justifying or condemning the arrangement with the private party involved in any way, one can state that the Shivnath case points to the absence of macro-political stability causing damage to private sector involvement in the water sector⁷.

It is to be noted that the mere repetition of the statements regarding the urgency of creating water sector assets and their national importance, et cetera, without significantly addressing the issues listed above is quite unlikely to cut the ice with any serious private sector actor. To what extent are the Central and State Governments willing to seriously engage in this matter needs to be seen.

We proceed to explore how investment in the irrigation infrastructure can be structured to make it attractive to the private sector investors, assuming that the Indian polity will sort out the above tricky and contentious issues.

5. Areas in Which Private Sector Participation is Feasible

The initial section of this paper has highlighted the need for possible private sector investment in new dams. It ignores the possible role of the private sector in other aspects of surface irrigation management. Again, there is room for private sector participation in irrigation financing that falls short of equity

⁷ See Patkar and Aravinda "Interlinking mirages", in *The Hindu*, December 3, 2002 among other instances of public outcry against the move to "privatize" a 23 km stretch of river Shivnath in Chhattisgarh by the then government. The move has subsequently been cancelled by the next government.

contribution in specific dams. This section discusses possible areas in which the private sector participation is possible without involving such equity contribution.

5.1 "Bridge Finance" for Irrigation

It was pointed out that in the case of Maharashtra, in 1999, the total financial need was estimated at Rs. 30,000 crores while the annual Own Tax Revenue of the state is just Rs. 39,737 crores. A similar if not worse situation is observed in all states. There are many calls on the State revenue. Under the circumstances, the State Government makes provisions for irrigation construction in its annual budget and its Five-Year Plan outlays at levels that are much smaller than the total projected need. This is inevitable. However, what makes it worse and perhaps not always inevitable is that these smaller allocations are then further spread thin across several projects within the state. This becomes necessary on account of political pressures emanating from different geographic parts of the state and the need for the State Government to be and also seem to be fair. In consequence, the actual allocation to any specific dam project becomes miniscule compared to the projected capital cost. Thus, the projects take much longer to complete, involving as it must, sharp cost escalations over time. For example, the Gosikhurd project on Wainganga was slated to cost Rs. 150 crores in the eighties. Its cost was revised upwards by the time it was cleared through the environmental, technical, political, and administrative hurdles – the last two being specific to the issue of regional politics in Maharashtra and documented in Phansalkar 2003. During the entire period of the nineties, allocations to the project were at ridiculous levels of a few crores each year. The project has still not moved much beyond the survey and drawing board stage despite a passage of 20 years since its conception. While the extreme pro-Western Maharashtra biased manner of irrigation financing was the principal reason behind this, the phenomenon of piecemeal financing of a large number of dams is very common and the consequences of each of them getting delayed and costlier is equally common.

It is possible to explore the possibility of a consortium of private sector investment bankers offering a form of bridge finance

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5.2 Possible Role of Management: Filling

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ve-Year Plan outlays at levels that are
al projected need. This is inevitable.
orse and perhaps not always inevitable
ations are then further spread thin
in the state. This becomes necessary
ressures emanating from different
and the need for the State Government
r. In consequence, the actual allocation
t becomes miniscule compared to the
is, the projects take much longer to
ust, sharp cost escalations over time.
d project on Wainganga was slated to
ighties. Its cost was revised upwards
through the environmental, technical,
e hurdles – the last two being specific
itics in Maharashtra and documented
g the entire period of the nineties,
ere at ridiculous levels of a few crores
s still not moved much beyond the
stage despite a passage of 20 years
the extreme pro-Western Maharashtra
n financing was the principal reason
on of piecemeal financing of a large
mmon and the consequences of each
id costlier is equally common.

re the possibility of a consortium of
nkers offering a form of bridge finance

for the purpose of avoiding these delays. For instance, such a
consortium would offer – to say Maharashtra a bridge finance of
Rs. 30,000 crores against state guarantee of a stream of annual
allocations of a pre-determined magnitude, which is comparable
to what the state is currently making any way. The advantage is
that the state will be able to execute projects without worrying
about funds availability. This is a straight forward financial
transaction between a consortium of investors and the concerned
State Government. This arrangement does not involve any
discussion on designs of the specific irrigation projects or returns
which the states would get there-from, but just a credible guarantee
that the State Government would in fact allocate a pre-determined
amount to the irrigation sector each year and that this amount
would be used for servicing the debt. This involves the credibility
and credit worthiness of the state and also the acceptable
guarantees, and hence it is a matter of negotiation between the
parties.

5.2 Possible Role of Private Economic Actors in Canal Systems Management: Filling an Emerging Institutional Void

The subject to be discussed now is much more specific to the
existing canal systems that have been created but are operating
well below their potential essentially because of management
reasons. As is commonly experienced, the canal systems fail to
perform to their potential for reasons described in the most typical
scenario described in Box 1.

Box 1**Correcting the Woes of Stagnation in Canals**

Water is released from dams into main and branch canals for conveyance and eventual release in distributaries which take them to farmers' fields. Ideally, farmers ought to get water just in time to irrigate their crops. This happens more by chance than by design for a large number of farmers in most of the systems in India. In fact what tends to happen is that farmers in "head reaches" routinely suffer from flooding and water logging arising out of excess flows and the farmers in "tail reaches" wait for the water and often cope with its absence by resorting to ground water irrigation. Water does not reach the tail end due to plugs and obstructions in the channels in its length. These are not cleaned due to a paucity of budgets and a bureaucratic system of administration. In effect only a small proportion of the potential users get water when they want and in quantities they require and these are the only groups of farmers who have a concrete positive stake in system performance. Other farmers get a raw deal and are hence not at all willing to pay for water. As a result the recoveries of water charges plummet and the system is progressively starved of funds for maintaining itself.

This downward spiral is a result of the management system characterized by agencies, which are not accountable to users and personnel who have no incentive to perform their tasks. As states experience increasing financial strain, they cut back on staff and their facilities. The canal management wings have been the most frequent victims of state neglect. Thus, both due to poor management system and due to state neglect, an institutional void is emerging in the canal management systems.

States have been tinkering with "partial privatization" such as contracting out canal system cleaning to private operators and have also been stressing on the complete transfer of irrigation management to the Water Users Association. The latter has not come of age and has to travel a long distance to meet the expectancy of the promise its propagandists make on its behalf.

While the involvement of private corporate sector entities is not meant to be, there is abundant room for thinking about the possible role of the private economic actors who will undertake tasks of canal system cleaning, proper operations of regulators and gates and thus contributing to better water delivery to farmers. It is necessary to think hard on how to structure their roles as well as incentives in such a manner that they stand to gain only

from an overall improvement. See forthcoming paper (I. Privatization: Issues, C further.

6. Is There a BOOT t

Now we return to the sector participation in

Diverse mechanisms in the creation of the sector in the creation of Competitive tendering defined circles for a chosen option in the telecom sector well in the telecom sector years highlights a huge in the consumer price possible and hence the power sector is a mixture Cogentrix walked out and contracting. Poor and a suggestion of franchise made Dabhol Power a participation in the infrastructure road sector is quite possible (BOOT) or Build, Operate that have been experimented out in ports as well irrigation infrastructure out? Some of the key

- Risk and Returns: management of a in three phases with 2002). The "feasibility in which investment of field survey, etc design and the feasibility to arriving at an a