REPORT
CONSULTATION WORKSHOP
IMPROVING IRRIGATION SYSTEMS FOR AGRICULTURE IN INDIA (P165254)
WORKSHOP ON IMPROVING IRRIGATION SERVICES DELIVERY
FEBRUARY 15TH -16TH, 2018

Contents

Background and Objectives

A one-day consultation workshop was held at the Imperial Hotel, New Delhi on 15th February 2018 to further sharpen the focus of the initiative and to get buy-in from a broad group of stakeholders. A half-day follow-up session with a smaller group was held on 16th February at the World Bank office.

This workshop was conducted under the aegis of the National Hydrology Project (NHP). The intent of the workshop was to discuss the prevailing issues with respect to canal irrigation services delivery in India and to generate a more broadly shared understanding of the problem through multi-stakeholder discussions with participants representing academia, civil society, government, industry, policy institutes and think-tanks.

The Council on Energy, Environment and Water (CEEW) assisted with facilitating this workshop.

More specifically, the objectives of the consultation were to get a better understanding of factors that positively/adversely impact service delivery of major irrigation systems in India with special focus on:

- The measurement of performance of major/canal irrigation systems
- Financing of Operations and Maintenance
- Institutional arrangements for delivery of canal irrigation in India and in other parts of the world
- Factors influencing the resistance to change and the space for change

The agenda also included a session that presented views of the central and state governments.

Structure of Workshop

The workshop was organized around four substantive sessions and two panel discussions. An opening session set the stage for the day. Each of the substantive sessions was anchored by a short presentation that provided the context and laid out a set of key questions for discussion. The discussion was facilitated by a moderator.

The first of two panels provided views from the central government, a state government and a state regulator. The panellists in the closing session provided their key takeaways from the day.

The detailed agenda is attached at Annex I.

Participation

The workshop was attended by nearly 60 participants representing a wide range of government and non-government organizations and agencies including the World Bank and CEEW.

Central government agencies represented at the workshop included the Ministry of Water Resources, River Development & Ganga Rejuvenation, the Central Water Commission, and the Central Ground

Water Board. The state governments of Telangana, Maharashtra, Punjab and Andhra Pradesh were represented by senior officials including the Chief Secretary of Telangana.

Other agencies represented at the workshop included the International Water Management Institute (IWMI), Indian Council of Agricultural Research (ICAR), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Centre for Policy Research (CPR), Observer Research Foundation (ORF), The Energy and Resources Institute (TERI), TERI School of Advanced Studies (TERI_SAS), Delhi School of Economics (DSE), 2030 Water Resources Group, Indian Council for Research on International Economic Relations (ICRIER), IIM Ahmedabad, International Commission for Irrigation and Drainage (ICID) and NABARD.

The list of participants is at Annex II.

Discussion Summary

The workshop opened with introductions by Vivek Srivastava (Lead Public Sector Development Specialist, World Bank) and Arunabha Ghosh (Chief Executive Officer, CEEW). Arunabha Ghosh stressed the need to increase ambitions in the context of irrigation service delivery. Given the increasingly complicated nexus between water, energy and climate change, it is necessary to anticipate challenges and combat them. He emphasized the need to move beyond the 'diagnosis of inertia' to a 'theory of change'. He requested all present to consider the deliberations as a platform to reopen the conversation on irrigation service delivery and invited everyone to treat this as the creation of a 'circle of trust'. Vivek Srivastava outlined the problem at hand – the sub-optimal/inefficient utilisation of existing canal irrigation assets. He noted that the focus of this work is on maintenance, operations and service delivery and not on new investments. The gap between Irrigation Potential Created (IPC) and Irrigation Potential Utilised (IPU) is one measure of this. Despite repeated diagnosis and description of various pathologies, not much has changed over the years. However, evidence of improvements in certain Indian states is suggests that there is scope for change. After a brief description of the proposed methodologies for the larger project, he encouraged all experts in the room to freely and frankly provide their insights and experiences to help shape this study.

Session 1: Measuring System Performance

(Power Point is at Annex III)

Key questions for discussion:

1. *Where should we set the boundaries for assessing performance (delivery only, agricultural production, value of produce)?*
2. *What indicators should we use for measuring the performance of major irrigation systems?*
3. *What data are required for these indicators and are these data readily available?*

Summary of discussion:

It was broadly agreed that for the purpose of this initiative, ideally the boundaries for measuring performance should be the offtake point (dam/weir) at one end and the point at which the water is released to users/farmers at the other end (the chak). While this is what we ultimately care about and

may be easier to measure, agricultural production and productivity measures are not ideal for measuring performance efficiency of irrigation systems as these are influenced by a host of other factors (borewell usage, cropping patterns and diversification, other inputs, agrarian management etc.)

Service quality indicators should focus on adequacy and reliability ("demand-based supply") and equity. The participants also recommended measuring the technical and cost efficiency of provider agencies. Thus, the recommendation was to shift the focus from engineering and construction to system *management.* ("Currently water is being dumped and farmers manage as best as they can").

There was an important discussion on the objectives of the system: delivering canal water to farmers versus conjunctive use in which, for example, canal water is partially used for recharging ground water and coping arrangements. On the other hand, if the objective is to reduce ground water stress, the focus on improving the efficiency of existing systems is the right one. The view was also expressed that canal irrigation is becoming increasingly less relevant and the focus should be on the entire irrigation system.

Session 2: Operation & Maintenance Financing for Irrigation Schemes

(Power Point is at Annex IV)

Key questions for discussion:

1. *How should the cost of O&M be determined?*
2. *How should O&M be financed (public vs. receipts)?*

Summary of discussion:

The discussion centred around two broad issues: (i) the adequacy of resources and attention to O&M; and (ii) the role of irrigation service fees (ISF)/user charges.

There was broad agreement that the Finance Commission norms are low, resources allocated towards O&M are inadequate, and that O&M is not a priority for provider agencies leading to sub-optimal performance of these systems.

Build and operate contracts were proposed as a way to address the O&M problem. However, while this would be relevant for new investments, this would not solve the problem with respect to existing infrastructure.

The greater part of the discussion focused on low user charges and collection rates. It was noted that user charges, in principle, play three roles; (i) financing of O&M; (ii) as a guide to resource allocation and use to the extent that they reflect the scarcity value of the resource; and (iii) as a means of building an accountability relationship between provider and user.

Participants noted that this low tariff-low collection equilibrium was common across several publicly provided services in India. It was suggested that the situation could be improved through (i) participatory tariff setting; (ii) regulatory intervention (which could make it politically easier); and (iii) better quality of services. While farmers were willing to pay (as evidenced by what they pay for minor irrigation) they are not willing to pay for poor services and due to perceptions of corruption. In addition, the transition from a poor services-low collection equilibrium to better services-higher collection equilibrium is not simple.

Several participants suggested that if Water Users Associations (WUAs) were allowed to retain some part of the collection, both collection and O&M (within their jurisdiction) would improve. This is the practice in some states and it is worth investigating empirically whether it is indeed the case.

It was pointed out that the problem is aggravated by the fact that politicians are not willing to charge. However, there was little progress on understanding the reasons for this other than that the volumes are relatively small.

Other suggestions included a Pan-Indian rate by crop type, taxes on end products and cross-subsidy (from industrial users).

Session 3: Institutional Arrangements for Service Delivery: Global & Indian Scenarios

(Power Point is at Annex V)

Key questions for discussion:

1. *What are the advantages/disadvantages of separating the Construction and O&M agencies?*
2. *Is Independent Regulation necessary?*
3. *What functions can and should WUAs perform in services delivery? WUAs vs. Integrated Service Provider?*

Summary of discussion:

Majority of the discussants agreed that there is value in one agency looking after construction and O&M until the system stabilizes. Control of O&M can then be handed over gradually to a competent agency. It was agreed that efforts to encourage better interaction between canal management and on-farm management (farmers/beneficiaries) should be institutionalised. The conversation focused largely on new projects rather than existing systems which continue to be operated by the public construction agency/irrigation department. It didn't explicitly address the question of separation of construction and O&M for existing infrastructure/schemes. There was some reference to irrigation departments being "the problem" and holding on to their "empire".

Participants expressed the view that the time is ripe to shift the focus from delivery of new investment projects to farm level productivity and income. The point was made that the pool of experts in the sector needs to expand to include more inter-disciplinary group of professionals working in O&M to better integrate various aspects of economics, finance, agriculture and farm management with irrigation services delivery.

The discussion also led to questions about ownership of irrigation systems and whether the fact that last mile institutions (WUAs) are handicapped as they don't have ownership. It was felt that even though government is typically the sole financer of canal irrigation infrastructure, it is not able to ensure sustained functionality. In this context attention was drawn to the distinction between participatory irrigation management (PIM) and irrigation management transfer.

Opinions were divided on the value and utility of WUAs as critical elements in the service delivery architecture. Underlining the importance of WUAs, it was proposed that a calibrated approach would be best when looking to diversify their roles, responsibilities and scope of influence across states. Citing the politicisation of WUAs as a hindrance to their functionality, it was suggested that their capacity be enhanced through civil society interventions.

A majority of the participants were of the view that India is a long way from "independent regulation" especially with respect to tariff setting as evidence from the power sector shows. Several discussants noted that regulatory bodies are seldom free of politics or free enough to be called independent. On the other hand, the room also noted that regulators can play an important role in resource allocations and dispute resolutions even if independence is not achievable just yet.

Session 4: Irrigation Service Delivery: Resilience or Inertia?

(Power Point is at Annex VI)

Key questions for discussion:
1. Is there need for change?
2. Is there space for change?
3. Identifying feasible solutions?

Summary of discussion:

This session focused on understanding the reasons for the stability and persistence of the existing equilibrium/systems and whether there were entry points for change. It was noted that the existing situation is a post-independence development and that even in 1945 public irrigation systems yielded a 11%-12% rate of return and there was a provider-customer relationship. What has happened and why?

The view was expressed that there is little demand for change from users. Others were of the view that there is a demand for change from users particularly those at the tail end of systems. Change has been taking place (e.g. modified warabandi), albeit slowly.

Some participants were of the view that change had to be driven from the top and strong leadership was a key pre-requisite for driving change (e.g. Madhya Pradesh). Others noted that the introduction of improved management information systems would drive change and induce better performance. Participants also suggested that the existing agencies and staff could perform better in the absence of financial incentives and organizational change if good work and champions were recognized (examples from Pnom Penh and Thailand were cited). It was also suggested that the current organizations could be shaken up through the introduction of lateral entrants. Another possibility: Leasing of land to large holders could increase demand side pressures. However, it was argued that prevalent existing laws were not conducive to risk free leasing and it would be difficult to conclude whether such a model would, indeed, positively impact services delivery. It was suggested that the private sector could play a role in improving service delivery and in the development, use and dissemination of better technology. No clear consensus emerged on how best to include private players.

Participants were of the view that the starting point to create the authorising environment would have to be the political leadership at all levels – local, state and central. Madhya Pradesh's successful irrigation interventions were discussed as examples of positive results due to an aware and engaged leadership. It was suggested that the application of basic management principles – identifying areas of change, giving the right incentives to staff (recognition) and using technology to inform decision making had resulted in vast increases in the irrigated area in M.P.

The session also discussed farmers' willingness to pay for irrigation services citing informal water markets as evidence. Farmers' were not willing to pay for unreliable services.

Panel 1: The Irrigation Service Delivery Experience: Views from the central and state governments and a regulatory agency

The discussion highlighted challenges associated in implementing new canal irrigation investment projects: non-availability of finance, delays leading to time and cost overruns, inadequate planning and lack of required data. ("A mission to Mars is easier than implementing an irrigation project")

Panellists discussed the divergence between the vision a project is designed to cater to, and what can realistically be achieved. Design considerations are subject to political considerations, rather than prevailing geo-hydrology and agro-climatic conditions, leading to cost and time overruns, sub-optimal utilization of infrastructure, and furthering the gap between IPC and ICU. It was noted that there are frequent instances of consumption patterns varying from design parameters in terms of seasons, cropping patterns and quantity of water absorbed. Examples of this can be found across the country particularly and panellists made particular reference to paddy-sugarcane growth pattern. The panel also noted that responsible agencies are not oriented to service provision, but more towards implementing capital works. Staffing and HR policies (e.g. frequent transfers), lack of incentives for awarding performance compound this problem. On operations and service delivery, the panel noted the construction orientation of the responsible agencies, the lack of required capacity and specialized skills and the inability to respond to changing demand as handicaps to improving the quality of services.

Telangana, in a bid to reduce expenditure on electing a governing body and democratising the associations (WUAs) is contemplating dividing them into three tiers representing the head, middle and tail reaches of the canal system. While panellists acknowledged that only a small percentage of gross budgetary allocations were invested in O&M, a recent project in Telangana is investing in pressurised piped irrigation systems starting right from the reservoir with subsequent service delivery through a ten-year O&M contract. The panellists recognised the importance of service delivery standards in successful implementation of such 'dam-to-roots' projects.

Maharashtra while ahead in terms of regulatory frameworks, collections of water tariffs, and integrated state level basin plans, often faced a disconnect between local realities and state level planning due to complex existing institutional architecture. The state has a separate water regulatory authority and as many as nine acts on water with responsibility spread across several government organizations. It was noted that farmers often adopt improved water and agricultural practices without support from the government. The panel highlighted the need for automation and accounting (through auditors) of existing irrigation systems along with reliable means of collecting measurable data. The panel advised the team to work on reducing the gap between practice and theory (inputs from academic endeavours).

There is potential for further democratic decentralisation and devolution of responsibility within irrigation services delivery. It was felt that improved coordination between responsible agencies and farm level is required. Low cost options for optimizing the use of existing systems for instance, by canals to feed tanks, were recommended where "modernization" was not feasible in the current circumstances. Another example of delivery optimisation discussed in the panel was the privately created systems by co-operatives for sugarcane in Maharashtra.

The panel closed with the statement that the big elephant in the room that was not explicitly addressed was that the objective appears to be to "deliver projects not water".

Closing panel: Key Takeaways and Way Forward

The final session summarised the day's discussions and sought to refine the problem statement and key questions for the ASA. The proceedings emphasised that pockets of success exist within the country and these could form the basis for further study and how best to scale such models.

The discussions stressed the need to maximise the return on investment in irrigation infrastructure, but there were differing views on whether broader social returns should be accounted for or not and to explore opportunities for private sector financing. Deliberations brought about a broad understanding about the different roles the private sector could play, though there were divergent opinions on how best to realize this. One of the suggestions put forth was to outsource O&M on a performance basis. There was consensus that integrated design, construction and O&M contracts with subsequent handover to decentralised agencies/actors in a phased manner were a good way to initiate private sector investment.

The day also brought out the mismatch between design (irrigation delivery systems) and reality (what is possible to achieve) given the hydraulic parameters implying that inefficiencies enter the system from the conception phase itself. India is caught between a crisis of sustainability and an imperative of equity. India pumps out 251 billion cubic metres of groundwater annually, mostly for irrigation. But access to groundwater has an equity dimension. For small and marginal farmers, groundwater offers a more ready source of irrigation than more infrequent supplies via surface canals. Thus, although canal infrastructure yields low returns on investment, farmers have adapted to a groundwater-based agrarian economy. This is equity by accident, not by design.

It was proposed that each state should define its management objectives and match these with management systems that support institutions and stakeholders towards achieving these. Tools such as incentives (to work efficiently and productively), combining engineering with management, pockets of leadership and role of data, etc. could then be customised and applied as per necessity.

A potential discussion point suggested was to look at ways to make realistic contracts between service entity and served populations. Keeping measurement indicators across the chain relevant for all stakeholders could be one such step. Some of these indicators acceptable to all could be based on performance (management, technology adequacy, reliability, timeliness and incentives, etc.) and other indicators (equity, environmental sustainability, economic productivity) could also be covered. This needs more functional management information systems, with data for asset management planning across the entire system rather than just surface canals, throughout the cropping season.

In the context of O&M the main takeaways were the need to operationalize the principle of asset management planning, need to decentralise O&M, and increase financing. O&M costs should be determined based on size, design, location, use patterns, age of system, and construction quality. Engineering and construction contracts should be married with O&M functions for, say, five years.

Within financing, on the question of tariff, the discussants sided on participatory determination of rates. Even if fees were low initially, with high transaction costs for collecting them, there is value in

establishing a contractual arrangement that creates a habit of demanding service against payment. This would ensure better collection and increase transparency in the system. Participants also suggested that revenues should be reinvested at the irrigation system level, rather than sent to state capitals to be returned as subsidies.

At the institutional level the participants agreed that should be designed for functions rather than form. There is a difference between who builds the irrigation system, who owns it, who manages it, and who regulates it. Different functions are embedded in these roles. The same agency need not have the requisite skills and capacity to deliver on all of them. Irrigation departments need mixed cadres of engineering and management talent. Agricultural water management must shift from mono- to multi-disciplinary functions; from energy-intensive over-extraction towards farm-based management using surface irrigation.

While recognizing the significance of participatory irrigation management, participants cautioned against widening the scope of WUA responsibilities to an extent that could spawn new forms of rent-seeking behaviour. The importance of regulators in the system was stressed upon for realizing allocative efficiencies, if not for setting tariffs. And greater devolution of water management authority does not mean that the government could withdraw fully. Its role as a facilitator of improved service delivery remains.

A more systemic approach relies on incentives: electoral returns for political leaders from rising farm incomes, rewards for irrigation officials for better service delivery, and effective empowerment for water user associations.

Next steps

The proposed study, its objective and relevance were broadly endorsed by various stakeholders within and outside government (CWC and state governments).

Background papers on performance measurements, institutional arrangements, operations and maintenance will be finalized.

A detailed action plan and study methodology will be finalized and the study launched.