



Among all Indian states, Maharashtra has been at the forefront of institutional reform in the water sector. It was also the first to significantly raise irrigation service fee on public irrigation systems. The Maharashtra State Water Policy of 2003 was a landmark of sorts. In 2005, the state passed two important pieces of legislation: one, Maharashtra Management of Irrigation Systems by Farmers (MMISF) Act, and two, Maharashtra Water Resources Regulatory Authority (MWRRA) Act followed by a US\$ 325 million loan from the World Bank to ground the above reform initiatives. Of all these, the MWRRA experiment has been closely watched by other states as well as by the civil society.

In this Highlight we make a broad assessment of the functioning of the Maharashtra Water Resources Regulatory Authority (MWRRA) and its implications at the ground level. The assessment is done against the core features/functions of the MWRRA and the key promises the MWRRA Act had made. These include 1) independence from executive and political systems and processes; 2) fixing of entitlements including individual and bulk water entitlements as well as inter-sectoral allocations; and 3) rationalization of water tariff.

Water Policy Research

HIGHLIGHT

Maharashtra Water Resources Regulatory Authority An Assessment

SOPPECOM

MAHARASHTRA WATER RESOURCES REGULATORY AUTHORITY AN ASSESSMENT¹

Research highlight based on a paper with the same title²

SOPPECOM³

RATIONALE AND METHODOLOGY

Two reasons have prompted this assessment: one, MWRRRA generated wide support at state, national and international levels and promised a lot when it was set up and there is a need to see how much of it has actually been fulfilled, and two, nearly seven years have passed since the MWRRRA Act came into being and that is a good enough time for any institution to demonstrate what it can and cannot do. The paper is based on SOPPECOM's recent field work on some selected irrigation projects in the state as well as its past and ongoing engagement with water sector issues, policies, laws and institutions in the state for more than two decades and its experience as part of the Lokabhimukh Pani Dhoran Sangharsh Manch (hereafter Manch) – a broad platform of activists and researchers formed to engage with the critical issues in the water sector in Maharashtra. In this field work we have focused on irrigation projects included in the World Bank supported Maharashtra Water Sector Improvement Project (MWSIP) that began in 2005, namely, the Kukdi Major irrigation project, with a cultural command area (CCA) of 2.24 lakh⁴ ha and Waghad Medium irrigation project, with a CCA of 9642 ha. Waghad irrigation project is well known for the three innovative Ozar WUAs set by Samaj Parivartan Kendra (SPK) with support from SOPPECOM during the 1990s and is also the only project which has a Project level federation of WUAs. Both Kukdi and Waghad Projects have been notified under MMISF 2005, Kukdi in its very first phase (2006-07) and Waghad in the second (2007-08).

WATER SECTOR REFORM PROCESS IN MAHARASHTRA

The MWRRRA is located within water sector reform process that has been underway in the state since 2000. It is as part of this process that the Government Order of 2001 increased the irrigation tariff by 50 percent (taking 2000 as the base year) with a proviso of 15 percent increase every subsequent year. The Maharashtra State Water Policy came out in 2003; and the year 2005 saw two important pieces of legislation: one, Maharashtra Management of Irrigation System by Farmers (MMISF) Act, and two, Maharashtra Water Resources Regulatory Authority (MWRRRA) Act followed by the initiation of the MWSIP with a US\$ 325 million loan from the World Bank to ground the above reform initiatives.

OVERVIEW OF THE MWRRRA

The MWRRRA was set up to regulate water resources to facilitate and ensure judicious, equitable and sustainable management, allocation and utilization of water resources; to fix the rates for different uses of water (MWRRRA Act 2005). The main functions of the MWRRRA originally included:

1. To determine, regulate and enforce the distribution of entitlements for the various categories of use and the equitable distribution of water entitlements.
2. To establish a water tariff system for various categories of water users.
3. To review and clear water resources projects within the Integrated State Water Plan (ISWP).
4. To determine the priority of equitable distribution of

¹This IWMI-Tata Highlight is based on research carried out under the IWMI-Tata Program (ITP). It is not externally peer-reviewed and the views expressed are of the author/s alone and not of ITP or its funding partners - IWMI, Colombo and Sir Ratan Tata Trust (SRTT), Mumbai.

²This paper is available on request from p.reghu@cgiar.org

³Field work and compilation of highlight was done by Suhas Paranjape, K J Joy and Seema Kulkarni

⁴One lakh = 0.1 million

water available at different scales/ levels during periods of scarcity.

5. To establish a system of enforcement, monitoring and measurement to see that the actual use of water, both in quantity and type of use, is in compliance with the entitlements issued.
6. To resolve disputes with regard to entitlements and tariff.

The MWRRA took up six pilot projects in its first phase in 2006-07 and moved incrementally to include more than a 100 major, medium and minor projects by 2008-09.

AMENDMENT TO THE ACT

In 2011 the Act was amended and the mandate to allocate water across different uses was taken away from the MWRRA and instead is now vested with the Cabinet of Ministers. The amendment also ratified all the earlier decisions of (re)allocation made by the High Powered Committee since its formation in 2003 and added that these decisions would remain outside the jurisdiction of the courts. The provision in the original Act to have public hearing for re-allocation of water across different uses was also removed.

IS MWRRA INDEPENDENT?

An Independent Regulatory Authority (IRA) is often justified on account of a separation of roles between the implementer and that of a regulator because crucial decisions with regard to the sector need to be based on 'techno-economic rationality' to steer clear of influences by "vested interests". The IRA is an effort to hand over the regulatory function to an independent agency of experts, protected from undue pressures from the bureaucratic and political authorities.⁵

Although critiques view this as an effort to depoliticize the water sector and unleash privatization, MWRRA with its professed independence from the political and executive pressures has been lauded as a good example of IRA

MWRRA comprises a Chairperson and two other members, in addition to five special invitees from each of the river basins. Currently all the members are retired government officials from the water resources and finance

departments. They are selected by a committee of secretaries from seven different departments headed by the Chief Secretary. The same selection committee also doubles up as the State Water Board which is expected to prepare an Integrated State Water Plan (ISWP). With so much of bureaucratic influence, the MWRRA can hardly be called an independent authority.

Regulation and enforcement of entitlements is done by a regulator appointed in each project at an appropriate level who is expected to do random checks during water rotations. The regulator who belongs to a different subdivision of the same irrigation system is unlikely to give an independent and critical remark. Settling of entitlement disputes, another of MWRRA's critical functions, is done by a Primary Dispute Resolution Officer (PDRO)⁶. As per the GR⁷, the PDROs are: Chief Engineer concerned with major projects; Superintendent Engineer concerned with medium projects; and the Executive Engineer concerned with minor projects, indicating that the entire regulatory and enforcement functions are performed by the administration.

Not only do the administrative interferences continue, but political pressures too are not uncommon. Continuation of the High Powered Committee until recently and its decisions related to water allocations even after MWRRA was formed undermines MWRRA's 'independent' role. Thus it neither has operational independence nor the freedom to operationalise its original mandate.

DETERMINATION OF ENTITLEMENTS: ROLE OF MWRRA

The MWRRA Act, 2005 mandates to determine the distribution of entitlements⁸ within the different categories of use after sectoral allocations are made by the Cabinet. The three main categories of use are domestic water supply, industrial water supply and irrigation.

Bulk Water Entitlements for irrigation, are to be issued by the River Basin Agency to the Water User's Associations at the primary unit level or the minor level, Distributory level and Canal or Project level. Individual entitlements are issued for lift irrigation on reservoir or canals. Such entitlements are supposed to be administered, registered, measured and monitored by the respective River Basin Agency in close co-ordination with relevant Government agencies. Since the RBAs are not in existence, it is the

⁵Drawn from the "Concept Note and Agenda for the National Workshop on Independent Regulatory Authorities (IRAs) and Related Institutional Reforms in the Indian Water Sector" organised by Prayas, Pune, TISS, Mumbai and IIT-Bombay on 28 August 2009 at Mumbai

⁶is supposed to address disputes regarding issuance or delivery of an entitlement within a category of use.

⁷GR No. MWRRA-2006/(308/06)/WRI

⁸The term Entitlement means an authorisation either by MWRRA or RBA to use water.

WRD which functions as the RBA. The MWRRRA has issued “The Technical Manual for Fixing, Regulating and Enforcing Entitlements for Irrigation Projects”⁹ The MWRRRA has determined the entitlements for about 100 projects so far in this manner and put them up on its website. Our analysis of these entitlements throws up a number of issues.

1) The first observation is that in both Kukdi and Waghad project, in spite of it being pointed out repeatedly and being accepted by MWRRRA that critical parameters like reduction in live storage due to siltation or losses in transit, etc., should be based on empirical measurements and not on unverified coefficients, MWRRRA continues to use them in its estimates. After six years of the pilot phase, we find no improvement in this respect and no attempt by the MWRRRA to see to it that the situation in this respect improves.¹⁰

2) In the methodology, the entitlement for irrigation is worked out as a residual, after deducting all non-irrigation uses. Implicitly, all other uses are granted a higher priority than irrigation. The water policy as modified by the recent GR¹¹ accords priority to drinking water over irrigation but not to other non-irrigation uses. The MWRRRA needs to face this squarely and develop a methodology that implements the water policy directives.

3) For the same methodological reasons, within irrigation use, river and other lifts have similarly been accorded higher priority over command area irrigation, which in fact should be accorded higher if not equal priority. Though entitlement for river and other lift is not worked out as an entitlement, implicitly they are also accorded a higher quantum of entitlement.

For example, in Kukdi, the implicit entitlement for river lifts works out to be of the order of 3300m³/ha, while entitlement worked out for flow irrigation in command area is only 821m³/ha. In Waghad, similarly, if we

consider the implicit entitlements per ha, for the Rabi season, lift on reservoir receive 2366 m³/ha and drip on reservoir 1582 m³/ha and lifts on canal receive 2744m³/ha, while the entitlement for flow irrigation has been worked out at 1302 m³/ha. That the impact of this is not small can be seen by an attempt to rework the Kukdi entitlements based on the assumption that river lifts and command areas will be on par with respect to entitlements. This raised the command area entitlement from 821 m³/ha to 1205 m³/ha.¹²

The MWRRRA thus needs to take a serious stock of the methodology that it has worked out for determining entitlements, especially with regard to flow and lifts.

IMPLEMENTATION OF ENTITLEMENTS

The Waghad system is well organized in terms of an active federation formed at the project level that is in regular dialogue with the Executive Engineer's office. By and large it receives its annual and seasonal entitlements as per the annual storages. The federation in turn monitors the delivery of these entitlements, ensures that measuring devices are in order, canal losses are measured, number of rotations and actual water used is recorded for every rotation. Waghad is able to receive at least 5-7 rotations in the Rabi and hot weather seasons together. Tapping of flow water for dry periods between rotations is done in Waghad, but is restricted due to the monitoring done by the Federation which has a patrolling team in place.

Kukdi on the other hand is different with no measuring devices in place, handing over of Operation and Maintenance to WUAs not yet done, project level federation not formed, entitlement records not kept, entitlement documents not handed over to WUAs and in some cases even to the section offices. In the few WUAs that we studied there has been a general discontent about the number of rotations, water not released as per the demand of the WUA. Overall in Kukdi irrigation is

⁹Entitlements are worked out by the MWRRRA using the following information: Designed utilization in kharif, rabi and hot weather; live and dead gross storages, total cultivable command area (CCA), evaporation loss (annual and seasonal); river losses (if any pick up weir is below the storage dam); river gains (post monsoon flow, return/regeneration flow if any); water allocation to bulk consumers, lift irrigation, pressurised irrigation systems with CCA; net CCA (which is minus the drip and lift CCAs permissible on both reservoir and canal); water allocation to domestic and industrial supply and the list of WUAs at the minor level with the number of beneficiaries and CCA under each.

¹⁰In Waghad the Executive Engineer informed us that in the current Rabi season siltation losses were going to be considered thereby changing the quantum of entitlements for a normal year.

¹¹GR dated 18/5/2011

¹²The main culprit here is a methodology that is blind to entitlements. The Kukdi entitlements for the river lifts are due to blindly assuming a duty of 300 ha/MCM for the lifts without any thought of entitlements. In the case of Waghad they are based on a GR dated 29/11/2002 which states a maximum percent area of the CCA (6 percent for lifts on reservoir and 14 percent for drip on reservoir and 10 percent on canal lift for food crops only) and a maximum percent quota of the net available water that can be allocated for lifts on reservoir (3.5 percent), drip on reservoirs (5.65 percent) and lifts on canals (7 percent).

largely about harnessing and capturing ground water to irrigate during long gaps between two rotations. The Canal Inspectors (CI) and the Section officers we spoke to in Kukdi agreed with this observation and said that expansion of command area without due attention paid to the increase in river, canal and reservoir lifts means that command area entitlements are low and frequent rotations are not feasible. If rotation is completed in the entire command area of a minor, then several of the WUAs will not get even a single rotation in a season. According to the CI working in one section of the Kukdi project not more than 10 percent of the area is covered in one rotation and not more than three rotations are usually possible in Rabi and summer together.

TARIFFS

The other important function of the MWRRRA is to establish a water tariff system and to fix the criteria for water charges at sub-basin, river basin and state level through a process of consultation with the beneficiaries, based on the principle that the water charges shall reflect the full recovery of the cost of the irrigation management, administration, operation and maintenance of water resources project. It is expected to review and revise the water charges after every three years.

APPROACH PAPER AND TARIFF ORDERS

In 2008 the authority took up the task of developing criteria for bulk water tariff- an approach paper was developed by a private consultant and later revised by the authority itself after a lot of opposition from the civil society to both the process and the content of the approach paper. Subsequent to this revision, MWRRRA developed the criteria for determining tariff and issued the tariff order currently in force. Broadly, the changes introduced by the revisions were a) according greater weightage to affordability in fixing tariff; b) reducing the overall cost of operation and maintenance so that the burden of cost sharing on the users is reduced; and c) introducing various concessions to different categories of farmers.¹³ One of the important disincentives introduced in the tariff has been charging 1.5 times the water charge for beneficiaries having more than 2 children after the commencement of the Act.

However if one were to compare the rates proposed under the earlier GR that provided for a 15 percent annual increase, the MWRRRA tariff order in fact manages to reduce the tariffs both for area based as well as for volumetric supply. For example the rates prior to the MWRRRA for volumetric supply per 1000m³ were Rs. 71.40 for rabi and Rs. 144.80 for hot weather and currently they are Rs 60 for Rabi and Rs. 90 for hot weather. SOPPECOM has already raised a number of issues in respect of the overall methodology and process that we shall not go into here.¹⁴ At present the MWRRRA is in the process of preparing the second tariff order for the period 2013-16 without really doing a ground review of the implementation of earlier tariff order.

IMPLEMENTATION OF TARIFF ORDER

Waghad

In Waghad, water bills are issued by the WRD to the Federation for the total volume of water released at the canal head in every season. The Federation in turn issues water bills to each of its 24 WUAs, based on the total volume of water released at the minor head. The federation reports almost 62 percent losses in the system from canal head to distribution up to the minor heads, expected to reduce after the sector improvement programme. The federation appealed to the WRD to take these losses into consideration. In response a GR was issued in 2006 for Waghad which brought down the tariff by 50 percent to take these losses into account.

Interestingly, Waghad is still following the old tariff order and not the new one developed by MWRRRA that has lower rates. While the Federation does not lose out much because of tariff adjustment GR, the minor level WUAs are still paying old higher rates. Since the new rate itself is not being applied, the concessions and the disincentives are not applied as well. The federation thought that it would be too cumbersome to do so and more importantly they did not see a reason to disrupt the simple and smooth mechanisms that they had set as regards tariff collection. In Waghad, moreover all the WUAs also charged their members up to 3 to 4 times the volumetric water charges

¹³Prominent among these have been concessions given to project affected beneficiaries, beneficiaries with land holding size less than 2 ha or those with land holding size less than 4 ha and belonging to Vidarbha or Naxalite regions etc. *Adivasis* are exempt from any payment of water charges and some concessions were accorded to horticulture cultivators for the initial gestation period and for users of water saving technologies like drip or sprinklers. The earlier decision of charging well owners 50 percent charges were revoked through the new tariff order.

¹⁴Submission presented before the MWRRRA to its Tariff Approach paper brought out in 2008 and more recently in 2010

levied on the WUA.¹⁵ Yet in Waghad there were no instances of people opposing the increase or getting out of the irrigation system as a result of increased costs simply because farmers were now assured of water supply to almost all of them, this is accepted and farmers are even paying advance water charges.

Kukdi

In Kukdi the new tariff order was being implemented in the water bills issued to the WUAs by the WRD. However none of the concessions were given and most of the beneficiaries were not aware of these concessions. None of the WUAs we visited had a system of charging on area basis or hourly basis. Tariff collection from members was a *post facto* informal sharing. Once the WUA is billed by the WRD, the members who have taken water either by flow directly or through their wells held a meeting and based on a broad understanding of who benefited how much the amount was shared out. Tail enders and other water deprived did not receive water, were also not billed and have slowly for all practical purposes fallen out of the system. In the larger WUAs members decide to put in a little more (about 10-20 percent over the bill) to cover admin costs.

CONCLUSIONS

Our study of these two projects not only provided us with some assessment of the MWRRA in respect of independence, entitlements and tariff but also pointed to deep seated changes under way within the commands of these projects.

As an independent Authority, the MWRRA has shown little independence and while it has passively fulfilled its functions in respect of entitlements and tariffs, there is little attempt on its part to actively engage with the process of determining entitlements in the various projects, analyzing them, monitoring and improving them or as acting as a watchdog entity. The revision of the first approach paper on tariffs and the consequent lowering of tariffs is perhaps the only instance in which it did somewhat rise to what its role should have been. It has not engaged with how its method includes implicit priorities and entitlements.

In terms of the implementation of the entitlements and tariff orders and the interaction between the MMISF and

MWRRA Acts and the situation on the ground, we see contrasts and similarities between the two projects that we studied – Waghad and Kukdi. Waghad is medium project with a compact CCA while Kukdi is a multi river, complex major project that has an overextended sprawling command. In addition, Waghad has a Federation of active WUAs that have taken over the project management. However, Waghad is very clearly an exception and the general situation is likely to be much closer to Kukdi in most projects. We may treat Waghad as an example of the maximum potential that can be realized and Kukdi as the average case.

In the implementation of entitlements, we see that in Waghad, entitlements are communicated to WUAs, that billing is regular and information on rotations is communicated in an adequate manner and many frequent rotations are provided in rabi and hot weather. The locus of governance in Waghad has moved in the direction of devolution. Entitlements and quotas are communicated to the WUAs and the WUAs participate in determining inter-WUA allocations each season. In contrast, and paradoxically, the locus of governance in Kukdi has moved in the opposite direction after the sector reform enactments, though this could partly be a fortuitous coincidence. Decisions and meetings that took place at project level are now taking place in the Mantralaya, PIPs are absent so that there is uncertainty about when rotations will start or end. The number of rotations in a season is also small. The governance situation above the WUA level has deteriorated.

The situation within the WUAs shows that whole nature of flow irrigation is changing. These systems have been designed to operate independently of groundwater interactions. Today, groundwater has become an important element in the system, with potentially far reaching implications. Only a small number of farmers earlier had wells. Now almost all farmers in the command have wells. More and more farmers are relying on wells and looking at flow irrigation as a supplement and mainly as a means of recharging their wells. The uncertainty created by lack of information, inability to provide sufficient number of rotations due to over extended commands, has exacerbated these trends in Kukdi.

Crop patterns have been changing and more efficient methods of irrigation like drips and sprinklers have also

¹⁵For example in one of the WUAs we visited, the volumetric charge for Rabi was Rs 50000 but its internal charges and the collection there of was about Rs. 150000. Much of this additional collection was to meet the administrative costs of governing WUAs. For WUAs that charged on an hourly basis the charges ranged from Rs 160-250/hour for Rabi. WUAs that charged on an areas basis charges ranged from Rs 1000-1600/acre for hot weather.

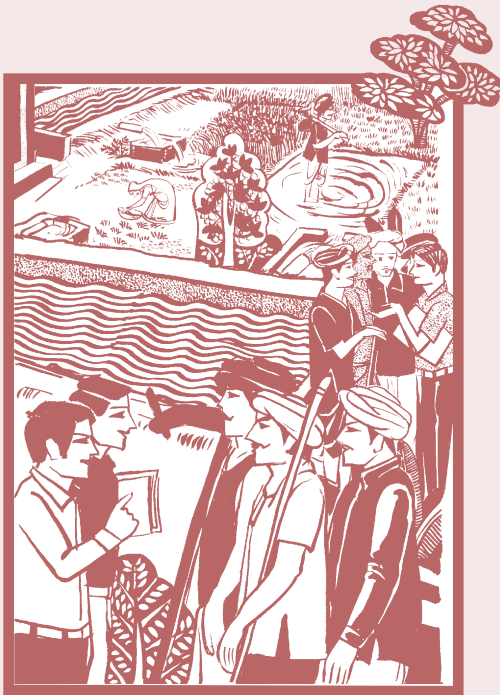
meant that farmers prefer to receive as much of their water as groundwater recharge than direct flow application. This has led to profound changes in attitudes. Unlike flow application where head reach farmers would release water after their fields were irrigated, groundwater preference has led to the tendency of accumulation of water and head reach demand has grown and lost the self limiting character it had. This has made for sharpening inequalities between head and tail, within the system at all levels.

These developments too have had different kinds and degrees of impacts in the two projects. Waghad shows that such developments have been attenuated in systems where there is a true devolution of decision making through the formation of a Federation. The pre-existence of active

WUAs and the complete turnover to the Federation seems to be a key factor in this. In Kukdi, paradoxically, the turnover to WUAs has led to an increased informalisation of the system which has also led to concentration of irrigation and increasing exclusion of farmers.

There are indications that this concentration is taking place in both Waghad and Kukdi and might represent a general trend. This could also explain the paradoxical findings from the data that show that in both Waghad and Kukdi, utilization has been small, of the order of 10 to 20 percent while the per hectare use is in excess of the entitlements worked out by the MWRRA. These data¹⁶ clearly point to the increasing concentration of irrigation in both systems (www.mwrra.org MWRRA evaluation 2009-10; 2010-11).

¹⁶MWRRA has monitored its entitlement programme over a period of 3 years for Kukdi. The entire project is yet to be covered under the MWSIP but about 11 percent, i.e. 8029 ha of the first phase of its 67000 ha command is covered under the pilot programme. For the years 2009-10 and 2010-11 actual Irrigated area has been less than 15 percent except for the rabi season of 2010-11 when it was 33 percent. Delivery of entitlements for Kukdi has been less than 50 percent of the applicable entitlement, except for the hot weather season in 10-11 when it was about 66 percent. If we look at the actual area irrigated and the total water delivered it is about 1.5 times to three times the entitlement that has been worked out by the MWRRA for a normal year. For example Kukdi water entitlement for normal Rabi season is 821m³/ha. Data shows that in 2009-10 as well as in 2010-11 water consumed has been more than 1000m³/ha and in fact in HW 10-11 it is about 3000m³/ha. Even in Waghad which has more than 50 percent of applicable entitlement delivered the actual area irrigated to the CCA has been as low as 9, 12, 11 percent in three of the four seasons. This is indicative of water concentrating in small part of the CCA. For Waghad the entitlement worked out through the MWRRA guidelines is about 1900m³/ha across both the seasons with a division of 1300m³/ha for Rabi and 600m³/ha for HW. The data from the evaluation shows that for 2009-10 rabi the water use was close to 2600m³/ha while for HW for the same year it was about 4481m³/ha for Rabi 10-11 it was about 5606m³/ha and for HW 10-11 water use was about 4300m³/ha.



About the IWMI-Tata Program and Water Policy Highlights

The IWMI-Tata Water Policy Program (ITP) was launched in 2000 as a co-equal partnership between the International Water Management Institute (IWMI), Colombo and Sir Ratan Tata Trust (SRTT), Mumbai. The program presents new perspectives and practical solutions derived from the wealth of research done in India on water resource management. Its objective is to help policy makers at the central, state and local levels address their water challenges – in areas such as sustainable groundwater management, water scarcity, and rural poverty – by translating research findings into practical policy recommendations. Through this program, IWMI collaborates with a range of partners across India to identify, analyze and document relevant water-management approaches and current practices. These practices are assessed and synthesized for maximum policy impact in the series on Water Policy Highlights and IWMI-Tata Comments.

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