

Comments on Approach paper prepared by ABPS Infra Bulk Water Tariff

Preparing the Regulations for bulk water tariff is probably the first such step taken by the MWRRRA in the history of irrigation development in the Maharashtra State and also in India. So far the water tariff was determined on political or economic considerations and in many cases on ad-hoc manner. There was no systematic study made earlier on this very important subject. The MWRRRA and the consultants 'ABPS Infra' need to be congratulated in making a good start. The ABPS Infra, have prepared first out put in about seven months. The approach paper prepared by ABPS Infra, contains information about the international best practices on water tariff and analysis of the same in respect of relevance and applicability in the context of the situation in Maharashtra. The volume 1 contains 1. The present status of water system. 2. Organizational Structure. 3. Institutional frame work of the MWRRRA, the Bulk water providers including the newly formed Water Users Associations, MIDC,

The International Experience in Bulk Water Pricing, legal framework for Bulk water sector in Maharashtra, principles for tariff setting mechanism and frame work are well discussed in the Paper. The Paper then describes the issues indicated in the TOR in respect of frame work for Bulk Water Tariff Regulations and suggestions are offered on almost all the issues raised.

The annexure attached to the main report contain information on 1.definitions and meaning of Bulk Water Tariff (BWT), necessity of introducing BWT, definitions of Marginal cost, average cost, opportunity costs and pricing based on these principles. The annexure also contain various types / methods of treatments of water for recycling and reusing water and methods adopted for conserving water in all types of uses like Agriculture, domestic and industrial sectors.

Lack of data

While discussing the various issues in the Bulk Water Tariff, the consultants have said that the requisite data / information are not available. The most common and mandatory data in any irrigation project which is required to be collected is 1. Water account which includes, inflow, evaporation losses in the reservoir, spills, quantum of water lifted from the reservoir / river downstream, water released in the canals, transit and seepage losses and net water supplied at the outlet head 2. Cops and area of crops irrigated season wise, annually 3. Productivity of the crops, production and the value of the crops grown. 4. Water released for other non-irrigation uses. 4. The assessment of water fees and the actual recovery.

The Maharashtra Government have already initiated collecting information on all these points, analysis of the same and publishing yearly reports like; Status Report of the Irrigation projects, Bench marking and Water auditing reports. These reports must have been made available to the ABPS Infra, for all the years 2002-03 to 2006-07. The ABPS Infra have considered the data in respect of M&R as well as the Establishment costs for these very years. Hence it is not very clear what more data was requested by the Consultants and was not furnished. In case, the information given in these three reports is

not found adequate or reliable, then what more information is required to be collected for determining the principles for BWT is not mentioned in the Approach Paper. It will be also be appropriate, that the consultants identify the data required and include in the final report, so that there will not be any difficulty in revising the BWT after three years.

However in case the data / information given in these reports are not reliable or are inconsistent, the MWRRA and the other institutions will have to take a serious view and improve the data base immediately.

In our opinion the data on the losses in transit / seepage losses, actual quantum of water supplied up to the outlet is not reliable. The measurement of water is not carried out with precision and accounting water daily / periodically is also not done regularly.

If immediate steps in improving measuring and accounting of water in respect of all types of water uses are not taken in a time bound period, the entire exercise, now initiated, in increasing water use efficiency, better water management, full cost recovery or in short the Reforms proposed in Water Sector will not be achieved.

General comments on the Approach Paper

The approach Paper appears to have been prepared mostly on the published Data / information and reports. The consultants were required to visit a few representative Irrigation projects and some water supply schemes as well as industries for realistic assessment of the ground conditions, but the Approach Paper does not indicate any such information collected or used from the ground. Some of the data which is said to be not available for example crop wise, season wise area irrigated, productivity and profit from different crops, could have been made available, though on sample basis, during such visits.

Experience of other States in India

The consultants were requested to review tariff structure in some of the States in India where there are substantial areas under irrigation. However there is no reference of practices from other States. Perhaps the Bulk Water Tariff and the institutions like Service Providers have been introduced for the first time in Maharashtra and therefore no information is available from other states in this respect but the principles adopted in respect of issues like 1. Ability to Pay. 2. Betterment levy 3. One part or two part tariff. 4. Seasonal pricing, 5. Agriculture based pricing. 6. Incentives and disincentives 7. Polluter pays 8. Uniform water tariff across State etc the information on principles adopted by the other States would have been very useful.

Projections for O&M Costs and Revenue

The ABPS Infra have made extensive exercise to work out the M& R costs and Revenue realization from irrigation projects, so as to suggest the bulk water tariff for achieving full O&M cost recovery in the first water tariff period of three years 2009-10 to 2011-12.

Three alternatives are studied in details.

1. Actual expenditure figures for the past 5 year period 2002-03 to 2006-07 as provided by MWRRA and then projecting the costs to the first tariff period 2009-10 to 2011-12, by applying Compounded Annual Growth Rate (CAGR) approach the projected costs worked out for Canals, Head Works and Total costs.
2. Norms for M&R of the irrigation projects recommended by WALMI Aurangabad in 2008 and then projecting the costs for the first tariff period 2009-10 to 2011-12 with an escalation at 6%.
3. Norms for O&M as suggested by the Jakhade committee in 1988 and then projections made for the first tariff period 2009-10 to 2011-12 by applying escalation at the rate of 7.17%.

The projected costs as per the three different approaches considered by ABPS Infra are given below

Particulars	Rs. crores		
	Projected costs for the First Tariff Period		
	2009-10	2010-11	2011-12
CAGR 18.17% for canals	275	325	396
WALMI, 6% escalation	235	249	264
Jahade committee's Report 1988, with 7.17 % escalation	194	208	223

Comparing these costs, the ABPS Infra have, recommended the CAGR approach. No specific reasons are given for selecting this very approach. Possibly the CAGR approach gives higher costs in the first bulk water tariff period may be the only reason.

Earlier while discussing the WALMI report, it is mentioned by ABPS Infra, that the cost norms suggested by WALMI are based on selected few (10) projects and the norms for storage as considered separately by WALMI are not correct as the 1. The M&R costs of Head Works depend on storage and the length of the dams. 2. The M&R cost of canals are dependent on the length and the discharge, which is not taken in to consideration and therefore it is better to adopt the general conventional approach of determining the norms on the basis of the command area.

The Jakhade committee's basic norms are not considered as they are very old and figures are based on average over India.

Actually the WALMI has suggested escalation at the rate of 10% as per Para 6, Page 31 in their report, but the ABPS Infra have assumed the rate of 6%, which was considered for arriving the costs for the year 2007-08. Projected costs with escalation at 10% are shown in Table no 1. Annex A

CAGR Approach

In the CAGR method for projecting the growth, the actual or normalized values are to be used for calculation as long as these values retain the same mathematical proportion. The expenditure in the years 2002-03 to 26-07 is not uniform or in the same proportion. The expenditure in the year 2003-04 is less compared to the first year 2002-03.

The formula used in this method is given below.

$$\frac{1}{t_n - t_0}$$

$$CAGR (t_0, t_n) = \left\{ \frac{V(t_n)}{V(t_0)} \right\} - 1$$

Where , $V(t_0)$ =starting value, $v(t_n)$ is finish value and t_n-t_0 is number of years.

However the growth rate arrived by this method, does not take into account the values of the middle years. In this case the values in the year 2002-03 and 2006-07, $V(t_n)$ and $V(t_0)$ determine the growth rate. The ABPS Infra, have derived the CAGR for the canals only and the growth rate is 18.7% and then applied for projecting the costs of Head Works and the Total cost. If the rates for HW and Total are worked out separately the rates would be 14.19 and 17.69 respectively as shown in Table no. 2, Annex A.

The values of actual costs for the year 2003-04 are not consistent and are lower than the values for the year 2002-03. If therefore, we take the actual costs in the years 2003-04 to 2006-07, which retain the same mathematical proportion, the CAGR changes radically and for the canal the same works out to 32.71% for Head Works, 25.96% and for Total 31.20%. The projected costs for the first tariff period 2009-10 to 2011 to 2012 -12 shown in table no. 4 are far more than the projected costs as shown in the table 3, Annex A.

Virtually the CAGR is the escalation for projecting the costs for future period. If the escalation 18.17 is applied to the costs worked out by WALMI Aurangabad, the projected costs for the years 2009-10 to 2011-12 are as shown in table 5, Annex A

The most important point, which needs to be considered in this case, is that the projected costs should be realistic and need not be higher or lower. If the costs are lower, then the revenue collections would be less than the costs and the full O&M cost recovery would not be achieved. If the projected costs are more than the realistic costs, the retail tariff based on these figures would also be more and therefore would be taxing the farmers.

The experience of increasing the water tariff vies a vie, the net increase in the revenue; particularly in the irrigation sector needs to be taken into account. The water fees in Maharashtra are already very high, compared to the other states. The water fees are assessed by the lowest field workers in the WRD. When the fees are unduly high, there is a tendency amongst the field workers and the farmers to apply for a small area for obtaining the sanction for getting water and actually irrigate more area. There are cases where the sanctions are obtained for seasonal crop, while high value crops, with very high water fees, are grown in the field. In most of the projects, the cases of water thefts and unauthorized irrigation are found to be increasing, which is indirectly indicated (very low water use efficiency and low efficiency of the main canal in many projects) in the Water Auditing Report of Irrigation Projects.

Hence increasing the fees does not result proportionate increase in the revenue. The improvements in water measuring, water billing and controlling the water thefts as well as under booking of irrigated areas is possible with precise measuring of water flows, certifying the transit losses in canals by third party, timely accounting of water and better vigilance, may certainly yield significant revenue.

Similarly the inefficiency in water measurements and water billing for industries and domestic users as mentioned by the ABPS Infra (Para2.5.5) of the report suggests large scope in increasing the Revenue realization, without actually increasing the water tariff. These factors which are not directly mentioned by the ABPS Infra need to be taken into account by MWRRRA while finalizing the water tariff.

The ABPS Infra has not taken into account this factor and probably not verified (through the field visits to some representative projects), whether the costs projected are matching with the need base expenditure on maintenance and repairs of the projects.

M & R Cost Norms recommended by WALMI are based on 1. Demands which are close to the need based estimates (Discounting the probability of higher values likely to have been estimated due to deferred maintenance due to irregular budgetary provisions in some years). 2. Verification on ground the status of the various components of the project. 3. Discussions with the Project officer. 4. Taking into account the age of the projects and other physical conditions such as high rain fall, black soils etc. 5 Study of the special repairs carried out, particularly the minors and distributaries which are usually damaged due to swelling properties of the black soils.

The cost Norms should be so designed which will lead to carrying out regular maintenance, which is generally neglected and immediate repairs wherever necessary. Further the Norms should induce the project officers to maintain sound accounts of the amounts spent on different components of the projects so that the analysis of this expenditure will be able to improve the component wise Norms in succeeding years. Lastly the norms should be such as to induce economic use of water, increase water use efficiency and overall performance of the projects.

The Norms proposed by WALMI have introduced these factors, though on experimental basis, in separating allocation for Head works and separate Norms for potential utilized

and balance unutilized potential. While suggesting break up of Norms for canals in to Main canal, Branches and Minors adequate reasons are given in the WALMI's report, and this break up is based on the actual experience of the project officers and observations made during field visits. Once the accounts are maintained as per the break up by the project officers the same can be improved in the subsequent years.

In contrast the AVPS Infra have again reverted back to the conventional approach of bundling costs of all components including the Head Works in the CCA of the project.

It is therefore requested that the points discussed above may be considered by MWRRA in finally recommending the Norms for Maintenance and Repairs for the Irrigation Projects.

Costs on Establishment

The ABPS Infra, have projected the establishment costs on the basis of expenditure incurred in the last five years by applying CAGR index 7.17%. the establishment costs do not necessarily follow any formula. to find out most realistic costs following factors need to be taken in to account. 1. The engineering units at present working in the management of irrigation projects and the total costs incurred annually. 2. These units may have over or under postings so restructuring these units or redeploying these units so as to be effective as per the work load 3. The pay and allowance of the government is likely to increase substantially due to Central Government's acceptance of 6th Pay commission. This rise will have to be taken into account. 4. Within next 1 or 2 years, WUAs will be taking over O&M in about 6 to 7 lakhs ha, resulting, reduction of field functionaries like Canal Inspectors, Measurers and Cowkidars. 8. The reduction in CRT personal.

ANNEX 'A'

Table no 1

Projected costs escalation 10% based on WALMI's Report

ITEM	Escalation %	Costs 2006-07	Projected costs for first tariff period			
			2008-09	2009-10	2010-11	2011-12
H.W	10	131	172	189	208	229
TOTAL		34	49	54	59	65
		165	235	258	284	344

Table no 2

Rs. crores

Compounded Annual Growth Rate worked out on actual costs in 5 years 2002-03 TO 2006-07

ITEM	2002-03	2003-04	2004-05	2005-6	2006-07	CAGR
CANALS	66	56	72	125	131	18.7
H.W	20	17	30	27	34	14.19
TOTAL	86	73	101	152	165	17.69

Table no 3

Rs. crores

ITEM	PROJECTIONS FOR COSTS FOR THE PERIOD 2009-10 TO 2011-12					
	CAGR	2007-08	2008-09	2009-10	2010-11	2011-12
CANALS						
H.W	18.7	155	185	219	260	309/ 309
TOTAL	14.19	39	44	51	58	66/ 82
	17.69	194	229	269	317	372/ 390

The figures in the nominator are with Growth Rate worked out separately for canal, Head Works and Total costs and those in **bold type** are as derived by ABPS Infra

Table no 4

CAGR based on Actual costs in the years 2003-04 to 2006-07(year 2002-03 not considered as it is not consistent

ITEM	2003-04	2004-05	2005-6	2006-07	CAGR
CANALS	56	72	125	131	32.71
H.W.	17	30	27	34	25.96
TOTAL	73	101	152	165	31.2

Table no 5

Projected costs based on WALMI's Report with escalation at 18.7 % for canals, 14.19% For Head Works and 17.69% for total

Rs. crores

ITEM	Escalation %	PROJECTED COSTS FOR THE FIRST TARIFF PERIOD			
		2008-09	2009-10	2010-11	2011-12
CANALS	18.7	172	204	242	288
Head Works	14.19	49	56	65	74
Total	17.68	235	277	325	383

* * *