Role for Bureau of Water Efficiency (BWE) in Water Sector

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ABSTRACT
The Ministry of Water Resources is considering formation of Bureau of Water Efficiency (BWE). The proposed BWE is expected to work as a benchmarking & rating agency for various processes, plants, devices, consumer products, etc. which use water as one of the input. The objective is to replicate the success of Bureau of Energy Efficiency (BEE) in energy sector. The BEE was established by Govt. of India with the primary objective of reducing energy intensity of the Indian economy and has played a pivotal role in formulating strategies for energy efficiency, promoting innovative technology and spreading the public awareness. Though it is considered that the BWE will be formed on similar lines as that of BEE, it must be appreciated that the legal and policy framework, in which BWE will operate, will be totally different than that of BEE. Constitutionally, "Electricity" is a concurrent subject and the Central Govt. can play a decisive role through legislation on the subject, where as "water" is a state subject, which limits the legislative powers of the Central Govt. Secondly, unlike water, electricity is distributed through a well-controlled network and is measured at every distribution node, making it easy to account for and quantify. Thirdly, the mechanism for pricing & recovery of electricity is well established. The benefits of energy conservation are tangible and can be realized in terms of financial benefit. The BEE operates within the overall framework of the Energy Conservation Act (EC Act), 2001 and the proposed BWE is expected to be formulated under the Environment Protection Act. In the backdrop of these fundamental issues, it is a real challenge to create a statutory body in water sector, which can play an effective role similar to that of BEE. It is important to create an appropriate legal and policy framework for BWE considering the nature, structure and needs of each water use sector. The BWE will have to think innovatively to create strategies; promote water audit, formulate rating mechanisms; create incentive and disincentive procedures in such a way that it plays a role of catalyst in effecting water use efficiency (WUE) for various water use sectors. For industrial sector, the need is to create a rating mechanism with inbuilt incentives so that the industry invests in water efficient processes and technologies. For the domestic sector, the labeling system for consumer products & devises can act as an educating tool for general public about WUE and encourage them to go for water efficient gadgets. For local bodies like Municipal corporations, the central funding for STPs can be linked with the overall WUE of the corporation. Municipalities can charge differential Property tax structure for the buildings & townships based on the WUE criteria specified by BWE and so on. The paper discusses the broad framework for BWE and suggests different roles, with the possible set of strategies, for each of the sector, with the objective of making it an effective agency.

1. INTRODUCTION

The ever increasing demand for water from diverse sectors is posing a major challenge for the Policy Makers. The water resources are finite and are unevenly distributed in space and time. The problem is compounded by the impact of climate change, whereby the extreme hydrological events are going to be more intense and with increased frequency in the years to come. Supply side management solutions that are conventionally adopted, to meet the increasing demands are facing constraints due to various issues. Difficult sites for the new storage projects, land acquisition, rehabilitation & resettlement, environmental concerns, high investment costs are some of the issues affecting the development of water resources. Though there is no denying that more investment is needed in water infrastructure for further development of water resource, however, adequate attention has to be given to demand side management as well. In a country like India, having wide variation in water availability, social, cultural & climatic conditions, implementing demand side management solutions itself is a big challenge. The National Water Mission (NWM) which is one of the eight missions identified, to overcome the adverse impact on the climate change on water resources and its effective sustained

utilization in various sectors, is focusing on the demand side management. The objective of the NWM is conservation of water, minimizing wastage and ensuring its more equitable distribution both across and within states through integrated water resources development and management. The NWM has proposed the target to increase Water Use Efficiency (WUE) by 20% through involvement of all the stakeholders.

In this backdrop, the Ministry of Water Resources (MoWR) is considering formation of Bureau of Water Efficiency (BWE) to regulate and promote water use efficiency among different sectors. The proposed BWE is being set up to work as benchmarking and rating agency for various processes, plants, products, gadgets & agencies which use water as one of their input. The objective is to replicate the success of Bureau of Energy Efficiency (BEE) in the energy sector. The BEE was established by the Government of India as a body corporate with primary objective of reducing energy intensity of Indian economy and to play a pivotal role in formulating strategies for reducing energy consumption; promoting use of innovative technology; and spreading public awareness.

2. LEGAL STATUS OF BWE

Though it is considered that BWE will be formed on similar lines that of BEE, it must be appreciated that legal and policy framework under which BWE will operate will be substantially different than that of BEE. Constitutionally, “electricity” is the concurrent subject and central government can play a decisive role through legislation on the subject. BEE is a statutory body formed under Energy Conservation Act 2001. Whereas, “water” is a state subject and central government has authority to enact laws only in the certain areas such as interstate rivers, using the provisions of entry No. 56 of the Union List and interstate water disputes using article 262. Inter-State River Water Dispute Act-1956 and River Board Act-1956 are enacted by the Parliament under the constitutional provisions relating to water. However these acts do not have anything, even remotely connected, with the water use efficiency or the role that BWE is expected to play. Even the recent Dam Safety Bill was formulated as per the Article 249 and 250 of the Constitution, whereby, the States of Andhra Pradesh and West Bengal has authorized Parliament to enact law on the subject.

As indicated by the MoWR, the proposed BWE is to be formulated under the Environmental Protection Act (EPA) 1986. The EPA provides for “protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution”. This act defines “environment” which includes water, air & land and their inter relationships. Seemingly, it does not indicate any specific provisions which can be used for regulation of “water use” on the similar lines as being done by BEE. Even though BWE is established based on EPA as proposed, it is likely to invite legal objections and litigations challenging the legal validity.

There is not a single organisation under MoWR which has been created as statutory body specifically using the constitutional provisions on the subject of water. Any efforts to establish BWE only on the basis of EPA may not fully cover the objectives of efficiency in water use. Creating a statutory body under EPA looks a difficult proposition. The other alternatives are to establish a registered society like NWDA or a separate wing/department within MoWR. Creating a separate wing or department within MoWR is not recommended, as the agency will have tendency to slip back into typical bureaucratic mode and cannot be entrusted with a function which has to be handled in a mission mode. The “Energy Management Centre” which was replaced by BEE was a registered society under the Societies Registration Act, 1860. So BWE as a society looks to be a plausible proposition.

The Legal framework on which BWE will be based, will largely define its role in water sector. The strength of BEE lies in its regulatory authority derived from ECA which enables it to effectively enforce the efficiency norms in the energy sector. Due to the legal constraints, BWE may not have regulatory power that BEE enjoys. “Water Conservation act” similar to ECA is certainly out of the purview of Parliament unless two or more states specifically authorize the parliament to do so and other states follow on. This seems to be a remote possibility. The National Water Framework Law proposed in the new National Water Policy can provide for such bureau, but the constitutional validity of such framework law itself is being questioned. This does not mean that BWE has no effective role to play in the water sector. In India, we do not have a single organisation or agency looking after the efficiency aspect of water use either at national level or at state level. Certainly, there is a pressing need for such an agency. However, the mandate of BWE needs to be specified appropriately considering the nature, structure and needs of each water use sector.

3. MANDATES FOR BWE

Considering the limitations in getting regulatory powers for BWE as compared to BEE, the role that can be given to this agency shall be more than that of advisor, promoter and facilitator rather than a regulator. The broad functions that can be assigned to BWE are:

- Formulation of norms for water conservation and standards for water use in domestic, industrial, municipal, agriculture/irrigation sector etc.
- To recommend to central/state government to notify any user or class of users of water as designated user for special treatment.
- To prescribe guidelines for water conservation, for incorporation in building codes in respect of constructions in urban areas.
- To formulate labeling system for various gadgets; consumer products; household and office equipment based on water conservation norms.
- Standardization of water auditing procedures
- Strengthening and promoting consultancy services aimed at water conservation.
- To promote R&D specifically with the aim of improving water use efficiency.
- To develop testing and certification procedures.
- To promote testing facilities for equipment, devices, consumer products.
- To formulate and facilitate implementation of pilot projects in the field of water conservation.
- To promote use of water efficient systems, processes, plants and devices.
- To promote innovative financing of water efficiency projects.
- To give financial incentives to the institutions, projects promoting efficient use of water.
- Institute National awards for water efficient industries, municipal corporations, irrigation projects, power plants etc.
- To create mass awareness and disseminate information
- Capacity Building & Training of personnel in the techniques of efficient water use and water conservation
- Prepare course curriculum for efficient use of water and its conservation for educational institutions; boards, universities or autonomous bodies; management schools; and co-ordinate with them for inclusion of such a curriculum in their syllabus.
- Create a system for National examination, assessment and enrollment of certified and accredited Water Auditors.
- Maintain a database of certified and accredited Water Auditors
- Develop linkages with the organisations working in the water sector from central, state governments, corporations & local bodies.
- Involvement of all stakeholders

4. ROLE OF BWE IN PROMOTING IN DIFFERENT SECTORS

4.1. Industrial Sector

Industrial sector is a not really a major consumer of water; however it has profound impact on the water quality. At present the water use by this sector is about 1.5% which is likely to go up to 2 to 3 % in 2025 and further up to 4% in 2050. Water intensive industries are mainly coal, pulp & paper, sugar, textile, chemical, metal etc. Major use of water in these industries is for cooling, cleaning, industrial processes etc. This is the only sector which has a profound impact on the quality of water that is returned back to the environment. If at all the provisions of EPA are to be used & applied, then they can be used for the industrial sector. This is the only sector for which BWE can have some regulatory powers under EPA.

Just like energy, water auditing can be made compulsory for those industries who are bulk users of water beyond a particular limit per annum. BWE can play a pivotal role in regulating, promoting and ensuring efficient water use by industries in the following manner:

- Standardization of norms for consumption of water for specific industrial processes.
- Industry specific Water auditing regulation & norms
- Promotion of R&D efforts in water efficient processing by industry

- Capacity Building of industry personnel for efficient use of water through training, workshops and conferences.
- Incentives or subsidy in water rates for industries employing recycle & reuse of water.
- Preparing national norms & guidelines for Recycle & Reuse of water by industries.
- Technical & financial support for implementation of water efficiency measures
- Preparation of investment grade detailed project reports for establishment of water treatment plants specific to industries.
- Promoting and encouraging industry to take up water conservation projects as a part of their Corporate Social Responsibility (CSR).
- National awards & "Blue" star ratings for water efficient industries
- Recommendation of financial benefits or tax cuts for the National awardees or star rated industries

As the industrial sector is a well regulated sector, it is comparatively easy to enforce water use efficiency using provisions of EPA. However, the industrial sector is already regulated under various laws pertaining to taxes, labour, energy, export/import, pollution control etc. Having more regulatory constraints for water use is most likely to be resented by the industry. Moreover the investment required to implement efficient water use techniques and processes will translate into increased input costs and may have impact on final cost of the produce. It is suggested that before any strong regulatory measures are implemented, the industrial bodies like FICCI & CII should be consulted and taken into confidence. A dialogue with wide spectrum of water intensive industries should be undertaken.

A rating system for the industry should be devised & adopted whereby industries making efficient use of water should be rated in terms of "Blue" stars. However, this rating should not be given only for the sake of rating, but this must be associated with some benefits to the industry like financial incentives in terms of reduced water rates, tax cuts, rebate from local taxes etc.

BWE will have to specify the norms & benchmarking for the respective industries to get the star rating. Rating will require water audit and large number of auditors to cater to the needs of various types of industries. A special examination can be prescribed by BWE for certified water auditors by designing appropriate syllabus and conducting exam every year at National level. A market should be created for these certified auditors by making it compulsory for the designated industries to perform and report water audit annually.

Water connections to new industries should be sanctioned based on the water audit carried out by the certified water auditors for the various processes, specific to that industry. Only that quantity of water should be sanctioned, which is based on efficiency norms prescribed for that type of industry. The focus in the sector will have to be in the industries where the consumptive use of water is higher.

At present there are very few R&D efforts for water efficient industrial processes. BWE can establish a 'Venture Capital Fund' to encourage and invest in R&D. This function can be in similar lines that are established by BEE.

4.2. Domestic Sector

At present, domestic sector accounts for about 7 % of water use. With the increasing urbanization and population, it is expected that share of this sector will rise steadily. It is seen that the all major cities are invariably suffering from the water shortage. With the increasing demands from the domestic sector, which is a priority sector, the water availability for other sectors e.g. industrial and agricultural sector will be steadily diminishing. The consumption pattern by domestic sector depends on the social status; culture; attitude; standard of living, climatic conditions etc. Changing the habits of population at large is a challenging task. Different innovative methods will have to be adopted for use of water efficient gadgets, preventive measures, financial deterrents for overuse of water and waste. Though the quantity of water saved through enforcing efficient water use may be small in comparison with the irrigation sector, the saved water has the potential to serve the basic needs of additional population.

BEE has been hugely successful in domestic sector; not only in creating mass awareness about energy efficient gadgets but also ensuring that the public at large has actually started investing in them. The domestic sector is generally guided by the financial benefits that it can get through

power/water savings. In case of energy efficient gadgets, the consumer may have to pay more in terms of initial cost of the product, but the financial returns in terms of saving of the energy units is tangible. The consumer is ready to pay bit extra today to get the financial benefit in long run in terms of reduced electricity bills. However, this advantage is not available fully to the water sector. There is no metering system in domestic sector for most of the cities in India. The water rates are very low, so there is really no tangible incentive or benefit for consumers for saving water either through less use or through investing in water efficient products. That makes the work of BWE bit difficult. It will have to work innovatively with the objective to promote the adoption of efficient and effective water-use and water-saving technologies and to provide information for purchasers of water-use and water-saving products. BWE will have to adopt the following strategies to address the domestic sector:

- Rating & labeling system for the plumbing products e.g. tap equipment, showers, flow controllers, etc.
- Rating & labeling system sanitary ware e.g. toilet/lavatory equipment, urinal equipment etc.
- Rating & labeling system for white-goods e.g. washing machines, dishwashers, soaps, detergents etc. so that consumer can make an informed choice.
- The industries producing those gadgets will have to be incentivized and regulated to produce water efficient gadgets and also encouraged to get ratings for their products
- Special awareness program targeting towards household sector with focus on teachers, women and children.
- Course/modules on water conservation to be taught in school, colleges etc.
- A dedicated website for domestic sector, hosting Information database on water conservation techniques, school level or community level water conservation projects, rain water/roof top water harvesting, literature assigning a “value” to water saving.
- Special programs & awareness drives focusing on builders; NGOs; Office bearers of the housing societies, Panchayat Raj functionaries who can further popularize & implement the measures of water conservation.

With nearly 90% plumbing market & 50% of sanitary-ware market being from un-organized sector, placing the manufacturers under the purview of rating will be a challenging task. There is lot to learn and adopt for BWE from international experience. The countries like Australia, Singapore, New Zealand, England etc. have successfully implemented water rating & labeling system for domestic products. Similar norms and schemes can be adopted with suitable modification for Indian conditions.

4.3. Municipal Corporations

Municipal Corporations are one of the biggest bulk users in the domestic sector. Water is normally picked up from the reservoir and after processing, it is provided to the domestic consumers. Water wastage during transportation from reservoir to water treatment plant; from the water treatment plant to zonal distribution nodes; from the zonal distribution nodes to the domestic consumer is a major concern in most of the municipalities. Large volumes of water are wasted in the dilapidated & inefficient distribution network due to leakage and improper maintenance. BWE can play a supportive role by partially funding the modernization projects for the distribution networks. BWE can formulate national norms for supply of water to consumers in terms of per head per day and also the quantity of water to be treated & recycled back to the system.

Annual water audit & “Blue” Star rating of Corporation can be compulsory. National awards for the most efficient corporations can be instituted. This will reward the efficient corporations, whereas it will generate public awareness among the citizens about the functioning of their corporation and put public pressure on them to perform better. The audit will take into account water drawn from the reservoir; amount of water wasted in distribution network; amount of water recycled and quality of water returned back to the system. BWE can prepare norms in this regard and corporations can be incentivized with central funding for modernization of STP plants with a link to overall water use efficiency of the corporation. The concept of rainwater harvesting(RWH) is popular, but the actual implementation of rainwater harvesting systems does not match the rhetoric. In this regard also, BWE can formulate guidelines and promote implementation of RWH in townships; housing societies etc. Municipalities can regulate, incentivize and implement efficient water use through strict building codes, water meters, compulsory rain water harvesting, telescopic & rational water rates, potable and non-potable water

supply, recycled water for non-potable uses, sewage treatment plant for full capacity and so on. BWE can formulate national norms for all these issues.

4.4. Energy Sector

Energy sector is projected to be one of the major users of water. Thermal, Nuclear, Gas/Oil based power plants will use about 9% of water by 2050. This sector uses water mostly in recycled manner for cooling and steam generation purposes. However, the consumptive use of water, which is basically evaporation in cooling towers and leakages are quite substantial. With advanced techniques and water efficient equipment for the cooling processes, it is possible to reduce this consumptive use to large extent. BWE can specify national norms for various types of power plants and also initiate R&D efforts. It can tie up with institutions like Central Electricity Authority; National Power Research Institute; National Thermal Power Corporation; Nuclear Power Corporation etc. in commissioning pilot study projects and capacity building. Many of the corporation in energy sector are Public sector undertakings and it should be possible to put regulatory norms in this sector with mandatory water audit. However for this, BWE has to initiate a dialogue with these Corporations and try to incentivize their efforts and provide them with the technical support; funding for research projects; There are instances in 2013 that due to water shortage the thermal power plant could not be run to their full capacity in Vidharbha region of Maharashtra. This is certainly a pointer to initiate water efficient practices in power projects.

4.5. Irrigation Sector

At present irrigation water use is about 85%. This sector is going to face stiff competition from other sectors in the coming years as their requirements goes up. The share of irrigation is projected to go down to 74% in 2050. Irrigation efficiency in India is one of the lowest in the world and there is a lot of scope for improving this efficiency. A small increase in efficiency can make huge quantity of water available for other uses. At present there are no national norms, standards or guidelines for water use efficiency in irrigation sector. Central Water Commission is doing the work of benchmarking of irrigation projects in selective cases. However, considering the potential of saving water and its use for other economic activities, this sector must be focused more than other sectors. BWE can act as a big facilitator in promoting water use efficiency, equipment norms, guidelines and framework across India. The possible mandate of BWE in irrigation sector for can be as follows:

- Efficiency labeling of irrigation equipment like sprinklers, drip and advanced irrigation equipment.
- Devising norms for irrigation projects for conveyance efficiency, field application efficiency; and overall project efficiency.
- Linking of AIBP funding with efficiency norms provided by the BWE.
- Capacity building efforts for the project authorities.
- Preparing Standard syllabus for specialized program in efficient irrigation management.
- Funding R&D in irrigation sector.
- Giving star rating for a project as a whole based on overall water use efficiency
- Awards for the most efficient irrigation projects; water user associations etc.
- Promoting & financing lined canals and close conduits for bulk water transfer.
- Coordinating with WALMIs/IMTIs, for result oriented extension, R&D programs and auditing of the projects
- Sensitization of policy makers and high level officers from irrigation departments

While addressing the issue of inefficiency in irrigation sector, the focus should be on the project as a unit. Our Irrigation projects are typically characterized by low overall efficiency, varying between as low as 14% for Yeluru or Narayanpuram Project to 62 % for Koilsagar Project. These figures are indicative of huge potential in water saving for the irrigation sector.

5. Finances of BWE

Considering the limitations of BWE in having regulatory powers for all the sectors, the role of BWE will be mostly as advisor, promoter and facilitator. It will have to invest heavily in capacity building, mass awareness, hand holding of industry, R&D initiatives, funding of water efficient initiatives in all sectors. BWE will have to be provided with sufficient budgetary provisions to undertake all these activities. It is unlikely that BWE will be able to generate its own fund, though it may generate some amount through registration fee and accreditation fee. A "National water conservation fund" will have to be created to fund the capital investment activities through BWE. Similarly "State water conservation fund" can be made mandatory for states with conditional support from center.

Government of India and State Governments have invested heavily in water infrastructure through the successive five year plans. The indicative Central outlays for the Twelfth Five Year Plan under the Water Resources sector (Irrigation, flood management and command area development) would be about Rs. 4,22,000 Crore. This excludes provisions for drinking water & sanitation in urban and rural area. Most of these plan provisions are spent on supply side management. Even if a fraction of this outlay; say 2% of this amount, which will be to the tune of Rs 8440 Crores, is set aside as "National Water Conservation fund" for the activities for incentivizing & promoting efficient use of water, it will have profound impact on water sector.

The Tenth Finance Commission has made it compulsory for all other states to form State Water Regulatory Authority (SWRA). The formation of SWRA has been linked up with plan allocation for O&M of the projects and also to the recovery of water rates. Similarly, the states can be advised to form a state level water efficiency bureau, which will have a function to adopt, propagate and implement the norms & guidelines of National Bureau of Water Efficiency, in the respective States.

6. Organizational structure of BWE

It is remarkable that with manpower strength of 26 only, BEE has achieved huge success in almost all sectors. It has implemented its schemes through accredited agencies, laboratories, consultants, energy service providers and certified energy auditors. BEE has successfully harnessed the services of various established agencies & institutions in the sector. It is a good example, demonstrating that even a small agency can make big impact on the sector with a focused agenda and appropriate enabling mechanism. The same format will have to be adopted for BWE as well. The National BWE will also have to act through consultants for devising norms, standards and guidelines for efficient water use, designated labs for testing and rating of gadgets and equipment, accredited agencies like WALMIs/IMTIs, consultants, for conducting water in this sector etc. The well established institutes in water sector like the National Water Academy (NWA), Rajiv Gandhi National Ground Water Training & Research Institute (RGNGWTRI), National Institute of Hydrology (NIH), WALMIs/IMTIs etc. can be commissioned to formulate the syllabus for Water Auditors working in irrigation sector, and industrial sector. These institutes can be roped in for capacity building efforts. Pool of certified water auditors will have to be created over a period of time, which can further help in capacity building.

7. Conclusion

At present there is not a single agency entrusted with the task of promoting water use efficiency though there are many agencies dealing with development and management of water resource. The need for demand side management requires that we have a National level agency entrusted with the specific task of promoting water use efficiency across all water use sectors. It may not be possible to fully replicate the success of BEE in water sector, due to legal limitations. But certainly, there is a large scope for improvement in this neglected area. The BWE will have to act more as an advisor, promoter and facilitator rather than a regulator. It can adopt from the success of BEE and also from the international experiences on the subject. It is important to create an appropriate legal and policy framework for BWE considering the nature, structure and needs of each water use sector. The BWE will have to think innovatively to create strategies; promote water audits, formulate rating mechanisms; create incentive and disincentive procedures in such a way that it plays a role of catalyst in promoting water use efficiency (WUE) for all water use sectors.
