**Urban Water Security and Sustainability in India:**

**A Case for Reforming the Reforms**

# Subodh Waglea, Pranjal Deekshitb, Tejas Polb

# Draft

**List of Abbreviations**

|  |  |
| --- | --- |
| ADB | Asian Development Bank |
| AP | Andhra Pradesh |
| ArP | Arunachal Pradesh |
| BCM | Billion Cubic Metres |
| BWSSB | Bangalore Water Supply & Sewerage Board |
| CMC | Chandrapur Municipal Council |
| CMWSSB | Chennai Metropolitan Water Supply and Sewerage Board |
| CPHEEO | Central Public Health and Environmental Engineering Organization |
| CWB | Central Water Board |
| DJB | Delhi Jal Board |
| FYP | Five-year Plan |
| GBWSSB | Greater Bangalore Water Supply and Sewerage Board |
| GoI | Government of India |
| GoTN | Government of Tamil Nadu |
| GWIDC | Gujarat Water Infrastructure Development Company |
| HMWSSB | Hyderabad Metropolitan Water Supply and Sewerage Board |
| IFI | International Financial Institutions |
| IIR | India Infrastructure Report |
| ILFS | Infrastructure Leasing and Finance Services |
| IRA | Independent Regulatory Authority |
| JNNURM | Jawaharlal Nehru National Urban Renewal Mission |
| JUSCO | Jamshedpur Utilities & Services Company Limited |
| KUWSDB | Karnataka Urban Water Supply and Drainage Board |
| KWA | Kerala Water Authority |
| lpcd | Litres per Capita per Day |
| MJP | Maharashtra Jeevan Pradhikaran |
| MoUD | Ministry of Urban Development, Government of India |
| MSR | Municipal Services Regulator |
| MWRRA | Maharashtra Water Resources Regulatory Authority |
| NMC | Nagpur Municipal Corporation |
| NPA | Non-performing Assets |
| NRW | Non-revenue Water |
| NTADCL | New Tirupur Area Development Corporation Limited |
| NTPC | National Thermal Power Corporation |
| O&M | Operations and Maintenance |
| PHED | Public Health Engineering Department |
| PPP/s | Public Private Partnership/s |
| PSP | Private Sector Participation |
| RTI | Right to Information |
| SANDRP | South Asia Network on Dams, Rivers & People |
| SFC | State Finance Commission |
| SMT | Small and Medium Town |
| SPV | Special Purpose Vehicle |
| TE | Techno-economic |
| TERI | The Energy and Resources Institute |
| TNUDF | Tamil Nadu Urban Development Fund |
| TUFIDCO | Tamil Nadu Urban Finance and Infrastructure Development Corporation Limited |
| UFW or UAW | Unaccounted-for Water |
| UIDSSMT | Urban Infrastructure Development Scheme for Small and Medium Towns |
| ULB | Urban Local Body |
| UMC | Ulhasnagar Municipal Corporation |
| UP | Uttar Pradesh |
| UPJN | Uttar Pradesh Jal Nigam |
| UWSS | Urban Water Security and Sustainability |
| VGF | Viability Gap Funding |
| WB | World Bank |
| WHO | World Health Organization |
| WSPF | Water and Sanitation Pooled Finance |
| WSSD | Water Supply and Sanitation Department |

**1.1 Different Components of the Frame-work**

A review of relevant literature reveals that the term ‘water security’ is understood from various perspectives; and there are diverse interpretations of the term. Three main strands emerge. First, water security is discussed and interpreted in the same vein of the concepts of *livelihoods Security* and *food-security.* ***(***Hofwegen 2007***)***This discussion is more concerned with the adequacy of available water for the needs of everyday life and even for income generating activities that are critically or primarily dependent on water. The concept is not restricted to only quantitative dimension; the acceptable level quality of the available water is also a concern. Similarly, this discussion does reflect the equity concern, in the sense that the concern of adequacy is more prominent in the case of disadvantaged and marginalized sections of society. Second, the discussion on water security is more focused on access to water or water services for certain sections of society such as small farmers and citizens from urban slums *(*Lundqvist *et al 2003)*. This is primarily focused on the equity concern. The equity concern also has two dimensions: (a) access; (b) affordability. Finally, the third strand pertains to concern over sustainability—both, environmental sustainability and sustainability of water provisioning system, especially the utility providing water (Shultz & Uhlenbrook 2007, Hofwegen 2007). Unless the environmental sustainability is ensured, the availability of adequate quantity and acceptable quality of water cannot be guaranteed. Similarly, of the system of created for the provisioning of water is not stable and sustainable the supply of water to different sectors of society will be under threat.

Thus, the following four main attributes of ‘urban water security and sustainability’ could be discerned from the literature, viz., Adequacy, Equity, Environmental Sustainability, and Systemic Sustainability. Drawing from the discussion in the literature, these four main attributes could be further elaborated in terms of their different dimensions as depicted in Table 1. The concept of Adequacy could be made comprehensive, covering both the dimensions, quantitative and qualitative. In other words, it is important to ensure that the adequate quantity of water is actually supplied; but, it is equally important to ensure that the water supplied is of quality that is acceptable for use by human beings.

In the case of urban water supply, the attribute of equity is interpreted primarily in terms of the access to water for all, specifically to the disadvantaged and marginalized sections of the society. Here, the two dimensions of access are considered: (a) physical access, which depends on water rights or entitlement—of a particular group of people—to water source or supply; (b) affordability of water supplied, which is determined by the prices of the water and is also termed as ‘economic access’ (Valinas et al 2010, Foster and Yepes 2006**)**. Coming to environmental Sustainability, there are two dimensions that are most relevant for urban water provisioning. First, sustainability of the sources from which the city gets the water *(Rogers et al 2001, Lundqvist et al 2003)*. This source sustainability primarily pertains to the quantitative aspects implying year-round availability of required quantity and water from the source. This is especially relevant for the surface and ground water sources lying outside the city limits. At the same time, the sustainability or conservation of groundwater sources within or on the periphery of the city is also a matter of concern *(Sriniwasan 2008****)***. The attribute of ‘Systemic Sustainability’ is seen as critical for water security and sustainability, especially in the literature of the mainstream institutions *(WB 1998)* The main dimensions here are Efficacy (or Effectiveness) and Efficiency of the operations, and Responsive Governance by the agencies involved in governance of the sector. While efficacy implies the level of achievement of the objectives set, the term efficiency requires maximizing outputs of operations/activities using least amount of resources—physical/natural, human, and financial. Responsive Governance is seen as a matter not only of obligation towards the citizens or consumers, but also a precondition for Efficacy and Efficiency in operations.

The understanding of the terms ‘Water Security and Sustainability’, in the urban context can be further extended by operationalizing some of the dimensions defined earlier. In the case of two dimensions of the attribute of Equity, as we have seen before, the Physical Access at the operational level will be determined by the water rights or water entitlements, while the Economic Access will be determined by the affordability of prices. Coming to the dimensions of Efficacy and Efficiency, three operational elements would be critical, viz., (a) Financial Health of the Utilities and other agencies, (b) ‘Techno-economic Viability’ of operations involved in provisioning of water, (c) ‘Robustness of the Institutions’ involved in governance and management of urban water provisioning. All the three are closely interlinked. The latter two invariably have serious implications for the first one.

‘Responsiveness of Governance’ will be primarily dependent on the level of extraction of accountability of governing agencies that is practically possible even for the disadvantaged stakeholders. The extraction of accountability, in turn, will be critically dependent on: (a) transparency, in terms of unrestrained access to information about all aspects of operations, and (b) public participation of participation, rather even disadvantaged sections, which is not cosmetic or notional but true, meaningful, and effective participation.

It needs to be noted here that different elements of this framework are closely linked. As indicated before, Adequacy or Equity in supply cannot be ensured unless Environmental or Systemic Sustainability is not achieved. Techno-economic viability of operations has crucial implications for both Adequate Supply and acceptable quality. Further, Responsive Governance and Institutional Robustness are closely linked with conservation of groundwater.

**Table 1: Conceptual Framework for Water Security and Sustainability**

|  |  |  |
| --- | --- | --- |
| **Main Attribute** | **Critical Dimensions** | **Key Operational Elements** |
| Adequacy | Adequate Supply |  |
| Acceptable Quality |  |
| Equity | Economic Access | Affordability of Prices |
| Physical Access | Rights / Entitlements |
| Environmental Sustainability | Sustainability of Surface Sources |  |
| Groundwater Conservation |  |
| Systemic Sustainability | Efficacy  Efficiency | Financial Health of Service Providing Agencies |
| Techno-economic Viability of Operations |
| Institutional Robustness |
| Responsive Governance | Transparency |
| Accountability |
| Public Participation |

**Mainstream View: Understanding of UWSS**

It is useful to briefly investigate the understanding of the mainstream institutions of various components of the framework presented in the previous sub-section. For a long time, government agencies, including the Planning Commission were focused on the issue of ‘Coverage’ by urban water system (of the cities and towns(in Percentage of population covered out of total population of the city) as the only indicator of ‘adequacy’ (Raghupati et al 2005). Though, right from the Seventh Five Year Plan Document, the limitations of this indicator have been repeatedly mentioned, no new indicators were devised for assessment of performance of urban water systems for a long time (GOI 1985, 92). At a later point in time, CPEEHO came out with norms for urban water supply in terms of liter per capita per day (Raghupati et al 2005). However, this has been used more as an average quantity to be supplied at the level of city or town, and normally over a period not less than a year.

In effect, both these indicators were not useful to assess the equity in supply within the city, though it could highlight inequity across the cities or states. Neither were these indicators, even together, useful to give full understanding of the adequacy of water supply. They clearly did not touch upon the qualitative dimension of adequacy. But they even did not reveal the duration, frequency, or variation (diurnal or seasonal) in supply (ibid).

In the later years, many new benchmarks emerged, especially from the literature of the international financing agencies (WB 06, 08, ADB 07**)**. Many of these were adopted and adapted further by government agencies (GOI 2002, 07). However, they have not been made given due importance in policies, neither are they used extensively to monitor and rate performance of urban water systems.

The accompanying table (Table 2) presents some of the indicators often cited in the literature and depicts their connection with the different dimensions of Water Security and Sustainability discussed above. It also presents the accepted benchmarks for each of these indicators.

**Table 2: Indicators of Performance and Water Security**

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **Indicator of Performance** | **Relevant Dimensions of Security or Sustainability** | **Accepted Benchmark** |
| 1. | Coverage of Population (by Water Supply System) | Adequacy: Quantitative Dimension  (not all quantitative aspects) | 100% |
| 2. | Per capita supply of water at city level | Adequacy: Quantitative Dimension | 135 lpcd |
| 3. | Continuity of water supply | Adequacy: Quantitative Dimension | 24 hours |
| 4. | Quality of water supplied | Adequacy: Qualitative Dimension | 100% |
| 5. | Extent of metering of water connections | Efficacy & Efficiency (Economic Viability)  Responsive Governance (Accountability, Transparency) | 100% |
| 6. | Extent of non-revenue water (NRW) | Efficacy & Efficiency (Financial Health)  Responsive Governance (Accountability, Transparency) | 20% |
| 7. | Efficiency in redressal of customer complaints | Responsive Governance (Accountability, Transparency) | 80% |
| 8. | Cost recovery in water supply services | Efficacy & Efficiency (Financial Health) | 100% |
| 9. | Collection Efficiency (of water-charges) | Efficacy & Efficiency (Financial Health) | 90% |

# 1.3 Context: Macro-Scene of UWSS (Adequacy, Equity, Sustainability)

It would be useful to view the situation pertaining to the theme of ‘water security and sustainability’ at the macro or national level through the framework presented in the previous section, primarily along the four main attributes, viz., Adequacy, Equity, and Environmental Sustainability, and Systemic Sustainability.

***Adequacy***

The official statistics depict a somewhat bright picture of the level of adequacy of urban water supply in India. On an average, Class I Indian cities are supplied with a 179 LPCD of water (IIR 2009). The Class II towns or the small and medium towns (SMTs), however, receive water at a lower average level of 120 LPCD, which is still above the stipulated norm for small towns. Similarly, in terms of ‘Coverage’, over 95 % of the cities and towns in India are under coverage of piped water supply schemes (ibid). However, the government agencies accepts that coverage of cities is not a sufficient indicator to assess the adequacy as only 46% of the towns in India cover 100% of its population through water supply services (GOI 1985). As far as the adequacy of water at the source is concerned, the national level statistics show that India has a potential to harness 1122 BCM of water, of which present utilization amounts to only 1.9% (SANDRP 99). However, such macro-level information is not much useful as there are significant spatial and temporal variations in the availability of water at source. Hence, adequacy and availability of water need to be studied at the local level. The review of available statistics in this regard, indicates that bulk-level scarcity of water experienced by Indian cities is growing rapidly, and already more than 19 cities such as Chennai and Udaipur are facing severe bulk water shortages (Hinrichsen et al 1997). Thus, the data on all the three relevant indicators—coverage, average supply level, and source-level availability—suggest that situation on the count of adequacy is not very encouraging.

**Equity**

Available data could be used to view equity in urban water supply at different levels and in different aspects. Across the states in India, variations in the supply levels are large. For example, cities in the state of Maharashtra get, on an average, 310 lpcd of water, which is the highest, while cities and towns in the state of Tamil Nadu, on an average, receive at the lowest level of 79 lpcd (IIR 2009). Across the cities of different sizes, total water supplied to Class I cities amounts to 93% of the total urban water supply in country, whereas the other cities receive the remaining 7%. Inequity could be viewed in variations in terms of ‘hours of supply in a day’. The statistics shows that more than 14% of total of 908 cities and towns in India provide water for less than two hours per day, whereas 33% of towns supply for 2-4 hours per day and only 22% of towns supply for 6 hours or more (Ibid). These figures are from non-summer season, however, during water-stressed summer period many cities in India supply water on alternate-day basis or even once in 3-4 days or once in a week. For example, a newspaper based survey of 43 towns from different parts of Maharashtra state showed that, in the year of 2009, more than 10 towns received water once in a week, whereas three out of these 10 received water, once in 15 days for 2-4 hours (Prayas 2010). These are some of the dimensions of inequity across the urban India.

**Environmental Sustainability**

As Table? Indicates, one of the major concerns in this area is sustainability of water sources. As per the TERI’s data, India is already under ‘*water stress*,’ which is going to turn into ‘*severe* stress’ by 2050 (TERI 2007). Projections show that by 2050, 64% of urban population would be under water stress in India amounting to 1000 million approximately.

A large number of cities are dependent on surface water sources; however groundwater has been an equally important source for public provisioning as well as for self-provisioning in urban India. The urban population resorts to groundwater as an alternative source in case of absence of service or to cover up the shortfall due to intermittent and inadequate supply by the public services. In many cities like Udaipur, abstraction of groundwater is rampart. Across the country, such overexploitation has made future of groundwater sources highly insecure (Brisco et al 2008).

**Systemic Sustainability**

Unaccounted-for-Water (or UAW) which is composed of physical and commercial losses of water from water supply system is an important indicator of efficiency and systemic sustainability of the water supply system. Considering the limitations on length of the chapter, UAW and Financial Health can be seen as examples, leaving out other issues in Systemic sustainability for the time being. As per available data, UAW range from a minimum of 20% to 50% in Indian cities (ADB 2007, WB 2006). The average figure for unaccounted for water (UFW) quoted is 31.8%, based on a survey of 20 metropolitan cities of India (ADB).

Financial woes of urban water sector in India have a history of over three decades now. Water Supply and Sewerage Board (WSSB) of Maharashtra state (now known as Maharashtra Jeevan Pradhikaran or MJP) provides a classic example of deteriorating financial health of agencies in the sector. Data in this regard shows that over 90% of ULBs from Class II towns in the state of Maharashtra have not been able to pay back the loans availed for augmenting supply and refurbishing networks (Feedback consultants 2003). It needs to be noted that, most of the infrastructure that was built with these loans, by now, has grown old and inadequate. Neither can it supply water efficiently to current demand, nor it will be able to accommodate increasing population. Huge investments are needed not only to expand the network but also to refurbish old network in order to plug leakages and save water.

Thus, it can be concluded that, in all the four areas, the situation is grim in most of the Urban India. Such dismal performance has provided strong justification for fundamental reforms in the sector. The rationale for sectoral reform emerges from this situation. The following section discusses the overall rationale behind the reforms, the prescription of reform, and what reforms offer to the objective of Urban Water Security and Sustainability.

# 2.0 Rationale of Reforms: Diagnosis and Prescriptions

As mentioned before, proposals of reform sought justification from the dismal performance of urban water systems in the country, suggesting significant revamping of policies and institutions in the urban water sector. A large part of the voluminous policy-level literature on urban water sector reform comes from the International and Bilateral Financial Institutions (together called IFIs). These institutions have been strong proponents of reforms and have shaped the theoretical and policy-level discourse as well as practice-level instruments to promote reforms (WB 2006, WB 08, ADB 2007, WHO 2001). The following discussion on the diagnosis of the situation and the prescription of the reform summarizes the context of this literature.

* 1. *Diagnosis*

The diagnosis of the urban water crisis in India presented by International Financial Institutions (or IFIs) has been largely accepted by most of the mainstream agencies, including many state and central government agencies. The diagnosis clearly holds two factors responsible for the poor state of urban water supply. First, it proposes that the lack of recovery of capital and management costs from urban water supply systems is largely responsible for the poor state of infrastructure, affecting the financial health of the utilities and the sector. Second, IFIs emphasize that the ‘state-dominated’ model for water provisioning (or the public-provisioning model), though situated within representative democracy, is largely responsible for inefficiency and ineffectiveness in the urban water sector. The next two paragraphs provide brief discussion of these two arguments.

The first factor is the lack of recovery or failure to recover even the cost of operations and maintenance (or O & M) costs through tariff, which directly affects economic viability the operations and financial health of the sector. The deleterious effects of this factor could be explained in the form of the vicious cycle of ‘lack of recovery— underinvestment—poor services—lack of recovery’ (Please refer Figure 1) (WB 2006, ADB 2007)

Poor

Infrastructure

Under-

Investment

Economic

Losses

Lack of cost recoveries

Poor Quality of

Services

Paucity

Of Funds

**Figure 1: The Vicious Cycle of Recovery Failure and poor service delivery**

**(Source: we have developed it to capture the logic and present it, it is sourced from nowhere)**

The cycle indicates that failure to recover costs leads to economic losses, which dry out internal financial sources and make it difficult to source funds from outside. This financial crunch, then, leads to inadequate and poor quality of infrastructure as investments in expansion or expenditure on maintenance of infrastructure are reduced due to financial crunch. Poor infrastructure drastically affects the quality of services to consumers, who then have no incentive to pay for the costs.

The second factor underlying the current dismal state of performance, according to IFIs is lack of accountability of the frontline service providers. This essentially is rooted in the model of governance of the sector. In the current model, all the three key governance functions—policy-making, service provision, and regulation—are concentrated in the hands of state-owned agencies. The state owned agencies have two critical weaknesses affecting service provisioning. First, the political vested interests have direct and easy access to state agencies. These political interests interfere in significant manner - in key techno-economic decisions such as tariff, investments, and purchases. This interference is essentially aimed at securing benefits for the vested interests, mostly at the cost of the other stakeholders, including water users and utility. This interference, despite its deleterious effects persists because of second weakness of state owned agencies. The second weakness of the state owned agencies is absence of effective extraction of accountability of the service providing agencies. There are no provisions or mechanisms through which the consumers of the services can directly hold the service-providing agency or other agencies accountable to the cost or quality of the service provided. It is often argued that the accountability of the state-owned agencies is extracted through the elections that the political functionaries at the helm of affairs have to face. However, this indirect and longer route of accountability mechanism, for various reasons (that are beyond the scope of this paper), is not effectively working in the practice. Thus, the service providing agencies on the frontline are effectively unaccountable to consumers or citizens. The effect of this absence of accountability is further exacerbated by lack of transparency or opacity in operations and decision making of all the state owned agencies involved. These weaknesses bring in many deficiencies in the structure and functioning of these agencies. For example, the vested political and economic interests capture these agencies and sabotage their working to serve their own interests and secure multiple benefits. This is possible because of the absence of effective extraction of accountability of these agencies. Some of the deleterious impacts of such capture are: clientelism or political patronage, artificially depressed tariff, and irrational allocation or siphoning of funds. The ultimate casualty of such capture is rational decision-making and efficient, effective, and timely implementation.

* 1. *The prescription*

Based on the diagnosis, the IFIs and multilateral agencies provide a prescription that could largely be articulated in terms of two broad categories of reform measures: (a) Institutional and Governance Reforms, (b) Economic and Financial Reforms. While the key concern driving the economic and financial reform is ‘cost recovery’, in the case of governance reform, it is the state’s monopolistic control. In the subsequent paragraphs, both these categories of reforms are elaborated.

***Institutional Reform Measures***

The institutional reforms essentially attempt to address the problem of concentration and monopolization of functions and powers in the hands of the government agencies especially at the state level. The institutional reforms argue for four fundamental institutional changes: (a) Restructuring of the roles and functions of institutions in the sector, (b) Strengthening of ULB-level institutions, (c) Seeking participation of private players, (d) Separation and divesting the state of the function of regulation and handing it over to the specially created independent regulatory bodies.

Restructuring of the roles and functions primarily involves separation of the policy-making function from the function of service provisioning, with the assumption that the policy-making function will remain with state agencies. This separation of the policy-making function is seen as essential for curbing interference of political vested interests—and the other problems it brings with it—in the function of service provisioning. The restructuring also involves restructuring of the state level agencies handling different service-provisioning related functions in the urban water sector. There is push for ring-fencing of these agencies, mainly through their corporatization and for restricting their role mainly to supportive and facilitating functions such as creating infrastructure, helping raising finances, and providing technical and financial support.

Strengthening of ULB-level institutions involves delegation of functions and powers to ULB-level agencies from the state-level agencies. The focus is on handing over the function of service-provision to ULB level institutions, while the state level agencies as mentioned before would play a supportive role. This also includes giving freedom to ULBs to choose engineering consultants (and not relying only on the state-level agency for this). In the case of large cities, the function of infrastructure building and raising finances are also supposed to be handed over to the ULB-level institutions.

Private Sector Participation (PSP) is recommended by reform, in diverse forms and to diverse degrees, especially in the function of service provision. This is supposed to enhance the efficiency and efficacy of the function of service provision. It would also open the direct and shorter route for holding the service providers accountable for their performance and costs. This will be possible because the private player would be bound by a contract, stipulating all the possible parameters of service provisioning, to which it can be held accountable. Alternatively the private provider will be regulated by the Independent Regulatory Authority (IRA). At the policy level, this would require transformation of the status of users from *‘Beneficiaries’* to *‘Consumer’ or ‘Customers’.* At the level of practice, this would mean providing support to ULB-level agencies for engaging private players and, if required, also to support local-level private players for efficient operations.

Establishment of independent regulating agencies (IRAs) is aimed at separation of the function of regulation from the function of policy-making, which is to be handled by the government. This will not only reduce the political interference in the regulatory function, but also strengthen the shorter and direct route of accountability of the service provider. As they are independent of the state, IRAs would also insulate the service providers from political interference and ensure rational decision-making and efficient, effective, and timely implementation. It needs to be noted that though it is called a regulator, IRA also handles decision making function—though in adjudicatory manner—on key issues like tariff and entitlement. The reform literature also mentions the use of the instrument of ‘regulation by contract’ especially with private sector service providers, in case the IRA is not established.

***Economic and Financial Reform***

In the case of economic and financial reforms, as mentioned before, the preoccupation is with the cost recovery. The attempt here is to break the above-mentioned vicious cycle by making the pricing based on cost-recovery, a central and a non-negotiable element of reform. The main instrument is rationalization of tariff in such a manner that tariff would reflect the true cost of supplying water to consumers. The first step in rationalization of tariff is introduction of Block Tariff or Telescopic Tariff structures. In fact, some of the reform protagonists suggest pricing based on the scarcity value of water, considering the higher level of paying capacity of most urban consumers in the country.

Another strongly recommended financial measure is ‘accounting and financial ring-fencing’ of water utilities. This involves maintaining budget and accounts of the water provisioning separate from those of other operations of the urban local bodies (ULB). This could also be achieved by creation of separate agencies for urban water provision at the state and ULB level.

Both these measures—tariff rationalization and ring-fencing, are expected to create grounds for approaching to sources of finance other than government grants and ULB budgets, through diverse mechanisms, including municipal bonds, SPVs, internal and external borrowings.

The two main measures suggested for institutional reform—viz., IRA and PSP—are also crucial in ensuring economic viability of operations and financial health of the utility. IRAs are also expected to be entrusted with the function of economic regulation, which will include not only tariff (price) determination, but will also include ensuring prudence and rationality of decisions about investment and purchase. IRAs would also hold the utilities accountable for their performance and expenditure. PSPs on the other hand, are expected to bring in external capital, sophisticated technology, and higher level efficiency in operations. Contracting of the private party would also necessitate ring-fencing of the accounts of the utility.

Table 1: Urban Water Reforms: A Snapshot

| **Category of Reforms** | **Practice Pointers** |
| --- | --- |
| Institutional Reforms | Restructuring the Institutional Structure in the Sector  *(Measures: Separation of the functions especially of state level agencies, Corporatization of State-level Bodies, Restricting their role to support and facilitation)* |
| Consolidation and Strengthening institutions especially at the ULB Level  *(Measures: Delegate functions and powers to ULB-level agencies from the state level, Consolidate the agencies performing separated functions of ‘promoter of infrastructure’ and ‘service provider’, Give freedom to ULBs to choose engineering consultants, Build capacity at the ULB level)* |
| Seeking Private Sector Participation (PSP) in Service Provision Function  *(Measures: Support local private player, Transform the status of users from ‘Beneficiaries’ to ‘customers’, Provide support for facilitating PSPs)* |
| Establish Appropriate Regulatory Mechanism  *(Preferably establishment of an Independent Regulatory Agency (IRA) or at least ensure ‘Regulation by Contract’)* |
| Financial Reforms | ‘Price (or Tariff) based on the Principle of (Full) Cost Recovery’  *(Measures: Making cost recovery the central and non-negotiable element of reform, to be implemented through IRA, which makes it politically feasible)* |
| Ring-fencing of Budget and Accounts of Water Sector Operations at ULB level  *(In order to help the ULB to borrow or leverage external funding as well as to access capital (bond) markets)* |
| Other Key Reforms | Implement the principles of ‘Universal Metering’ and ‘ 24x7 Supply’  *(These technical measures are seen as necessary for improving the techno-economic viability and would contribute to the improvement in the financial health of the utility.)* |
| Work on Strengthening of Surface and Groundwater Sources  *(Through a variety of measures such as GW Regulation and Watershed Development)* |

(Source: Adapted from WB 2006, ADB 2007, GOI 2007, IIR 2010)

# Reforms and UWSS: What reforms offer to UWSS?

The brief review of the literature proposing and elaborating on sectoral reform in the drinking water sector points at many reform measures that can have close relations or connections with many of the ‘Dimensions’ and ‘Operational Elements’ of the four ‘Main Attributes’ of ‘Water Security and Sustainability’, which are discussed before. These relationships or connections are presented in Table 4. The table essentially adds to the previously discussed Table 1 one additional—the fourth—column, viz., ‘Related Reform Instruments’.

**Table 4: Linking Reforms with Water Security and Sustainability**

|  |  |  |  |
| --- | --- | --- | --- |
| **Main Attribute** | **Dimension** | **Operational Element** | **Related Reform Instruments** |
| Adequacy | Quantitative Dimension | Adequate Supply | Measures for Systemic Sustainability will indirectly pave way for ensuring both these dimensions |
| Qualitative Dimension | Acceptable Quality |
| Equity | Economic Access | Affordability | Targeted and Transparent Subsidies, Life-line Tariff |
| Physical Access | Rights / Entitlements | Responsibility of allocation of entitlements is given to Independent Regulatory Agency |
| Environmental Sustainability | Sustainability of surface sources |  | Watershed Development |
| Groundwater Conservation |  | Groundwater Regulation |
| Systemic Sustainability | Efficacy  Efficiency | Financial Health of Service Providing Agencies | Regulation, PSP (PPPs), Cost Recovery (Tariff Rationalization), Ring-fencing of Utility |
| Techno-economic Viability of Operations | Regulation, PSP (PPPs), 24x7 Supply, Scarcity-Pricing, Cost Recovery (Tariff Rationalization), |
| Institutional Robustness | Institutional Restructuring and Strengthening (especially at ULB level) IRAs, PSP, Incentivization |
| Responsive Governance | Transparency | All the three are to be ensured by Independent Regulatory Agency |
| Accountability |
| Public Participation |

*Note: The reform measures in the fourth column which is added in this table are drawn mainly from the documentation available on the reforms, published by the MoUD.*

As the fourth column of Table 4 indicates, the reform measures are focused on the fourth Main Attribute, viz., Systemic Sustainability. There are three Dimensions for this fourth Main Attributes, viz., Efficiency, Efficacy, and Responsive Governance. Further, the first two dimensions are operationalized through three Operational Elements, viz., Financial Health of the System, Techno-Economic Viability of Operations, and Institutional Robustness. Reforms pay detailed attention to these three Operational Elements.

Beginning with ‘Techno-Economic (TE) Viability of Operations’, adherence to the Cost Recovery principle ensured by the IRAs would enhance the TE Viability of operations. IRAs, while regulating tariff and entitlements, would also monitor and regulate different aspects of techno-economic operations such as loss reduction, enhancing their viability further. Similarly, it is argued that private sector participants—which are driven by the profit motive—would ensure higher levels of techno-economic viability of operations. In addition, reform prescription also suggests a menu of related measures such as 100% metering, remodeling or renovation of equipments, 24x7 Supply (i.e., Supply for the entire duration of 24 hours per day and all 7 days of the week). These measures are expected to increase techno-economic efficiency to much higher levels. However, it needs to be noted that there are many critiques of many of these measures. Some reform protagonists also suggest pricing of water according to the scarcity value of water, in order to ensure most economic pricing of water, which would certainly enhance the TE Viability further.

This brings us to the second operational element, vis., and ‘financial health of service providing agencies’. First, enhancement in TE viability of operations would greatly help improve financial health of service providing agencies. For example, as mentioned before, ‘Independent Regulation’ or ‘Regulation by Contract’ are expected to ensure adherence to the principle of Cost Recovery, while rationalizing tariff structure. This will ensure financial health of the utilities. Independent Regulation will also ensure cost reduction through prevention of losses and prudence in investments and purchases. Further, measures for ring-fencing of utilities in the matters pertaining to the accounting and audit would make economic and financial transactions transparent and open them for effective oversight and regulation. This will ensure their financial health. It is also argued that participation of private players—with mandate and pressure to ensure profits—would further contribute to efforts to ensure financial health of the utilities.

Coming to the third Operational Element of Institutional Robustness, reform rely heavily on the measures of institutional restructuring and strengthening of institutions especially at the ULB level. Separation of roles and restricting the state-level agencies to the functions of infrastructure building and techno-financial support would help them to carry out these critical functions more efficiently and effectively. Further, devolution of the function of service provision, along with the measures for operational freedom and capability-building, would strengthen the ULB-level agencies, and make them more efficient and effective.

Reform prescription focuses on IRAs in this regard. IRAs, whose structure and functioning will be intricately designed through a specially designed law, are expected to be robust institutions themselves. IRAs would also make other institutions, especially utilities robust, by monitoring their technical, economic, and financial performance. The private sector participants are assumed to be robust as long as they are performing under scrutiny of an IRA, or as per the terms of contract under which they are working. Other than suggesting the measure of IRAs, reforms prescriptions do not focus much on measures for ensuring robustness of public-owned utilities, except the suggestions for introduction of mechanisms for proper and effective incentives to employees of public utilities.

According to the reform prescription, IRAs are going to play key role in ensuring the third dimension of systemic sustainability, viz. Responsive Governance. The laws determining structures and functioning of IRAs would have clear provisions for ensuring transparency, accountability, and (public) participation (or TAP) in the functioning of the utilities and the IRA itself, as well as in the interactions of other agencies (government and private) with utilities and IRAs. As per this understanding, strict adherence to these TAP-related provisions by the IRA and its insistence on adherence by other institutions will ensure responsive governance in the sector.

As mentioned before, the reform prescription pays great attention to the fourth attribute of ‘Systemic sustainability’ as compared to the other three attributes. The implicit argument for this emphasis seems to be that the problems plaguing the three Dimensions of the attribute of ‘Systemic Sustainability’ are at the root of all the critical problems faced by the sector. Hence, as per the argument, once problems with these three Dimensions are addressed properly, the sector will be in position to largely satisfy the demands of the other two attributes, viz., Adequacy and Environmental Sustainability. In fact, reform measures do not seem to be directly dealing with the issue of adequacy.

However, in the case of Environmental Sustainability, reform suggests some other concrete measures. For strengthening the sources of surface water, measure such as Watershed Development is suggested; while, in the case of groundwater, Groundwater Regulation is suggested as the effective measure for arresting depletion of groundwater aquifers.

In the case of the remaining attribute of Equity, in order to ensure Physical Access, the reform measures suggest that the IRAs (or Independent Regulatory Agencies) which will be handling the function of allocation could be asked to take due care of ensuring minimum level of physical access to water for all sections of society.

Reform measures are more explicit in handling the issue of Economic Access. Such explicit attention is warranted as the economic and financial measures—such as Cost Recovery Principle and Private Sector Participation—have been severely critiqued for their implications for affordability of water for poor. Two measures—viz., Targeted subsidies and Life-Line Tariff—are suggested by reform in order to ensure affordability of water for poorer sections. The concept of ‘Life-Line Tariff’ involves charging very low level of tariff for initial supply of certain limited quantity of water that is necessary to satisfy basic needs. Coming to ‘Targeted Subsidies’, literature on reform consider providing (tariff) subsidies to poorer and disadvantaged sections of society, but the pre-condition is to target these subsidies accurately in order to ensure that they are not misused by those who are not eligible, and, thus, the expenditure on subsidies are kept in control. Further, these subsidies should be provided through such mechanisms which would make it easier to locate the sources, recipients, and volume of the subsidies paid. This is considered necessary to keep check on the subsidies and their misuse, which is one of the main problems threatening the financial health of utilities.

Thus, there are many reform measures that have significant implications for the theme of this paper, viz., water security and sustainability in urban water sector.

# Brief Review of UW Reform in Indian States: Similarities and Differences

**Operationalization of Reforms in Indian States**

As elaborated in the previous paragraphs, the reform literature does prescribe a number of measures that have close connections with different dimensions and elements of water security and sustainability. As mentioned before, many of these measures not only are prescribed by the IFIs (like WB and ADB), but also could be found in the official documents of Government of India and Planning Commission of India since a long time. The central directions to states and ULBs for bearing O&M expenses were issued as back as in 1960s (3rd FYP). ULBs of metropolitan cities such as Mumbai and Chennai availed and successfully paid back the external loans way back in 1980s. It would be worthwhile to see what actually transpired on the ground in this regard in the Indian urban water sector especially at the state or city levels, which should be the main theatres of action for urban water sector reform.

The processes set in by the broader Economic Reform after 1991 provided an impetus for reform in the urban water sector, creating a significant push driving states and ULBs towards implementation of reform measures. The current status of these reforms could be understood by reviewing various initiatives taken up by states and ULBs, in terms of the policies made, institutions created, projects undertaken, and functions that were changed, added, or repealed.

In the previous decades, many states brought out State Water Policy documents. More than ten major Indian states have endorsed reforms in urban water sectors in their water policy documents. Some states such as Karnataka and Goa have come out with separate state policy documents for Urban Water Supply and Sanitation. A review of these policies shows that the states have approached reforms in diverse manner, especially in terms of emphasis and priorities for areas of reforms as well as instruments used. Despite the diversity, reform efforts by states could be broadly classified in two categories, similar to those used in the earlier discussion: (a) Economic/Financial Reforms and (b) Governance/Institutional Reforms. Table 5 presents a quick review of state-wise progress of reforms under these two categories, which is also summarized in the paragraphs below.

***Economic and Financial Reforms in States***

The review in Table 5 shows that states such as Tamil Nadu and Karnataka have invested considerable efforts in institutionalizing financial reforms. Karnataka, with financial support from Asian Development Bank (ADB), made for this purpose for the use of pre-existing para-statal bodies such as KUWSDB and BWSSB. The focus is on areas such as ‘cost recovery’ and modifying current tariff stricture into block-tariff structures. Upfront collection of payments for expansion of the supply network in Bengaluru is said to have set another example for reforms. Similarly, TNUDF completed first round of financing of water supply project in towns of Tamil Nadu state; it claims zero NPA levels (Bhaskar 2008).

| **SN** | **State** | **Key Highlights** |
| --- | --- | --- |
| 1. | AP | * **Financial:** (a) HMWSSB introduced block tariff structure and also started manufacturing and selling of canned water on a pilot basis, (b) Municipal bonds have been used by HMWSSB and Vishakhapattanam Corporation |
| 2. | Delhi | * **Institutional:** (a)Incorporation of DJB 1998, * **Financial:** (a) Introduced Block Tariff, though initial PPP efforts failed, (b) PSP in Soniya Vihar Water Treatment Plant |
| 3. | Gujarat | * **Institutional:** Incorporation of GWIDC, many proposals for PPP in water infrastructure and maintenance * **Financial**: Issue of Municipal Bonds in Ahmadabad |
| 4. | Karnataka | * **Financial**: Upfront collections from potential users for network expansion in Bengaluru |
| 5. | Kerala | * **Financial**: (a) KWA adapts to block tariff structure (b) Bottled water production would begin soon, plant has been set up by KWA |
| 6. | Madhya Pradesh | * **Institutional**: (a) Proposals to form tariff Regulatory commission, (b) Projects, supported by ADB and WB to improve water supply in four cities. |
| 7. | Maharashtra | * **Institutional**: (a) MWRRA instituted, Process of bulk water entitlements and rationalizing bulk tariff is underway, (b) Unbundling of state WSSB in to public sector companies is in process, (c) Study Committee for exploring Municipal Services Regulatory (MSR) in Maharashtra * **Financial**: (a) Cities such as Nagpur, Navi Mumbai, Badlapur introduced block tariff, (b) All UIDSSMT beneficiary SMTs are in process to introduce block tariffs, (c) Private investment proposals in Nagpur 24x7 approved |
| 8. | Orissa | * **Institutional**: (a) Legal actions regarding transfer of functions such as tariff and water supply to ULBs are complete, (b) Proposal to form Orissa Water Corporation (Public Ltd. Company) under consideration |
| 9. | Rajasthan | * **Institutional:** (a) 24x7 schemes on pilot basis in Jaipur, Ajmer and Naguar (b) Assigning water supply function to ULBs |
| 10. | Tamil Nadu | * **Financial**: (a) TNUDF supported pooled finance model, (b) PPP (for what?) in Thirupur, (c) Upfront collections to finance sewerage project in Alandur |
| 11. | Uttar Pradesh | * **Institutional**: (a) Restructuring of UPJN into 4-5 different utilities is under consideration, (b) Assigning water supply functions to ULBs is complete; ring-fencing is in progress. |
| 12. | West Bengal | * **Financial**: PPP contracts at Salt Lake and Haldia with JUSCO |

Table 5: Key highlights of urban water reforms in select states in India

(Source :)

The review also pointed out that tariff restructuringhas been taken up by many ULBs and state-level water parastatal agencies. Similarly, promotion of PPPs is also being persuaded by a number of states and ULBs, especially municipal corporations in big cities, despite public protests against such efforts. Such protests have been witnessed in cities like Latur (Maharashtra) and Mysore (Karnataka). As far as innovative financing instruments are concerned, barring a few exceptions like Karnataka and Tamil Nadu, majority of states are yet to use financial instruments such as bonds, pooled finance, or availing VGF schemes offered by the central government.

***Institutional and Governance Reforms***

Reforms in urban water sector from this category have not yet gathered speed. Most states are yet to restructure the pre-existing state-level government institutions such as PHEDs, WSSBs, and CWBs. While the Delhi government constituted an autonomous body, viz., Delhi Jal Board (DJB), initiatives such as incorporation of Orissa Water Corporation and restructuring of WSSBs of Maharashtra and UP are still at the stage of proposal. The restructuring plan of WSSBs proposes unbundling of engineering, O&M, and regulatory functions of the boards by incorporating independent public sector companies for each of the functions.

Similarly, implementation of the reform measure for devolution of functions to ULB-level agencies is slow in most states. The related measures like ‘rationalization of staff-configurations in the ULBs for water supply function’ also remain neglected. Maharashtra and Gujarat governments have taken few steps for rationalizing staff configurations.

Though endorsed by most state policies, the reforms related to private sector participation (PSP) are pursued by most states with caution. Apart from the commonly known PPP initiatives such as those in Jamshedpur, Tiruppur, and Nagpur, a total of 54 PPP projects are already under operation (IIR 2009). These include PPP projects for: (a) development and maintenance of infrastructure, (b) industrial water supply, and (c) desalination and sewage treatment. However, direct private sector investment is not evident so far in urban water projects, barring exceptions likeChandrapur. Importantly, many states are in the process of revising their regulatory frameworks for ground-water extraction and usage, some have already completed the process.

Coming to the Independent Regulatory Agencies, only four states have enacted the IRA laws, viz., Maharashtra, Arunachal Pradesh (ArP), Uttar Pradesh (UP), and Andhra Pradesh (AP). However the IRAs are established only in Maharashtra and UP, of which UP IRA is yet to get into action. Even in these states, the jurisdiction of the IRA is limited to tariff determination and entitlement allocation and only for the bulk water. In other words, the IRAs will regulate the quantity and price of water reaching the gates of the city. Thus, what happens inside the city and mainly the operations of the utility still remains under the state regulation. Implementation of the principles such as Cost Recovery or Scarcity Pricing are not yet implemented in the retail-level pricing in the urban water sector. The IRA in Maharashtra attempted to implement the Cost Recovery Principle for bulk water in a very ad-hoc and disjointed manner, attracting severe criticism and opposition from the stake-holders. In the state of Maharashtra, there is indication from the state government of establishment of a separate IRA in future to regulate municipal services. Such a regulating body would regulate the intra-city water activities as prescribed by reform.

Thus, in sum, implementation of the reform measures in the urban water sector is yet to gather speed. In fact, there is hardly any comprehensive and concerted effort to implement these measures in any of the state or city. Instead, what we find on ground is few sporadic and unconnected efforts to implement the reform measures in some cities. These are discussed in the subsequent section.

# Brief Review of Performance of Reform Initiatives

Very few studies are available on the practical initiatives in urban water reforms in India. Most of these studies cover developments during the initial phases of the respective initiatives. As a result, there is very little data to draw concrete conclusions, especially in view of the long gestation periods of reforms initiatives. The available studies often tend to focus either on achievements (mostly by the supporters of the reforms) or shortcomings (by critics and independent researchers). In this section, a review of literature available on five such initiatives is presented covering both sides of the story—the achievements and shortcomings of the initiatives.

***Tiruppur PPP Initiative***

Participation of private sector in the water supply project at *Tiruppur* (in Tamil Nadu) is secured in the mode of Public Private Partnership (PPP). It is one of the widely cited reform initiatives from the urban water sector. A Special Purpose Vehicle (SPV) called ‘New Tiruppur Area Development Corporation Limited’ (NTADCL) was formed for this PPP, with diverse equity-holders, including AIDQUA-Mauritius, and a consortium of contractors led by Bectel, Mahindra & Mahindra. The other stakeholders (not equity-holders) include: ILFS, local knitwear industry, a lenders consortium led by IDBI, GoTN. It began operations in early 2005.

The review of the Tiruppur water supply project shows that recovery of the costs is in doldrums. The NTADCL lost Rs 70 crores in 2008-09, taking the accumulated losses to Rs 177 crores. It sought Rs. 65-crore assistance from the state government to support restructuring of its debt from the consortium led by IDBI. It is argued that global economic slow-down resulted in reduction in industrial usage of water in Tiruppur. This pushed NTADCL into losses, as the industrial consumers were expected to subsidize the domestic users and bring profits to NTADCL. It was also reported that the private operator neglected water supply to domestic users in the peripheral areas of the town, while the industries receive unrestrained supply of water (Dwivedi 2010). Even in the situation of low water off-take by industrial users, NTADCL is not mandated to supply extra available water to domestic water users, while the population of Tiruppur town is increasing. All these factors, together, result in significant water shortage for people in the town (Madhav, 2008).

***Tamil Nadu Urban Development Fund (TNUDF)***

The Tamil Nadu Urban Development Fund(TNUDF) is set up in the state of Tamil Nadu, especially to access capital markets in order to finance municipal infrastructure projects. TNUDF is a cited as a success story of reform as the statistics quoted show that TNUDF has recovered its investments at an average rate of 94.75% during the seven-year period (from 1998 to 2004) (Venkathachalam 2005). There is a strong tradition of substantial capital grants from Government of Tamil Nadu (GoTN) to ULBs in the state as well as of revenue surpluses in the ULBs accounts. Benefiting from this tradition, TNUDF seems to have a chance to succeed in the absence of the weaknesses and constraints typically faced by utilities in developing countries such as financial indiscipline and defaults. Larger ULBs in the state such as Madurai and Chennai, as well as CMWSSB have issued bonds using their financial strengths, while smaller ULBs are accessing the Water and Sanitation Pooled Finance (WSPF) scheme of TNUDF.

However, a closer look at the allocations to various sectors revealed that, though the water sector was indicated as the priority sector, a large portion of funds was allocated to projects for roads and bridges (Vijaybaskar and Wyatt, 2005). Further, it is also pointed out that many of the ULBs accessed softer loans from TUFIDCO, a state financial institution, in order to foreclose costlier loans availed from TNUDF. This led to a steep fall in TNUDF’s returns on assets from 5.40% to 1.48%. Even earlier recoveries by TNUDF were not fully sourced from ULB’s direct revenues (such as property tax or user charges), but a substantial component came from state transfers. Thus, one needs to wait and watch before concluding TNUDF as a real success story of reforms in the urban water sector.

***Chennai Metro Water Supply and Sewerage Board (CMWSSB)***

CMWSSB or Metrowater, one of the earliest reforms initiatives in the sector, is now almost one and half decade old. In the year 2002, it reported a surplus in its revenue account for the tenth consecutive year and had been operating without state grants for the seventh consecutive year. Metrowater streamlined its operations, frozen hires, instituted audits in a wide range of operational sectors, expanded its network and coverage, modernized its systems, contracted out several components, and stayed on track with its Master Plan (Coelho 2010). It also can be viewed as a classic example of ‘ring-fencing’ of urban water utility as envisaged in reform. These measures by the board are said to have resulted in conversion of water ‘users’ to ‘consumers’**.**

However, at the same time, gradual yet significant reduction of government subsidies, without any effort to generate internal cross-subsidies, led to marginalization of those perceived as unfit to pay for water. This essentially threatened water security of the poorer sections of the society, both rural and urban (Coelho 2010). In addition, CMWSSB is termed also as the culprit behind the conflicts caused by large-scale transfer of groundwater from peri-urban areas, though external factors such as extreme water scarcity due to drought were also partly responsible (Janakrajan et al 2007, Coelho 2010). In the late 2004, when the rate of Metrowater’s extraction of water from private agricultural wells in the peri-urban areas of AK Basin reached about 100 million liters a day, crises erupted in the region. Protest action by about 400 farmers against Metrowater resulted in attacks on the pumping facilities of Metrowater.

***Greater Bangalore Water Supply and Sewerage Board (GBWSSB)***

‘Upfront payments’ by future consumers for expansion of the network in the uncovered areas of Bengaluru is cited as one of the positive developments in reform efforts. However, despite upfront payments, the consumers are reported to be not receiving the level of service promised before. This failure is explained by citing the haphazard and rapid growth of settlements in the service areas of the GBWSSB which was not envisaged during the planning stage and which resulted in significant cost escalations[[1]](#footnote-2). However, it is suggested that this failure is rooted more in response of GBWSSB to the criteria set for assessment of its performance. The fund allocation to GBWSSB from pooled finances was based on credit rating; as a result, its main preoccupation was with the financial viability, while enhancement in water supply or sustainability was not on its radar at all. Despite such focus on financial viability, GBWSSB had to take many extra-ordinary measures to ensure financial sustainability of the project, such as: (a) waiver of late penalties in the wake of late water supply and (b) allowing payment of charges in twenty installments instead of upfront (Ranganathan et al 2009).

***PPP initiatives in Maharashtra***

There are three known PPP initiatives in Maharashtra, Chandrapur, Nagpur, and Latur. Water supply operations in Chandrapur town were privatized under a management contract as early as in 2001, when Chandrapur Municipal Council (CMC) came under severe pressure for not able to run the scheme efficiently. In the contract, the expectations from the private provider are very modest and the contract gives full flexibility to the private operator in making investments. However, despite such an opportunity, the performance of the local consortium, *Gurukripa Associates* has been dismal. Its efforts for expanding network and for ensuring equity in supply are negligible (Wagle, et. al 2010). Different explanations are put forth: (a) interference by local politicians in day-to-day operations, (b) scarcity of the bulk water, due to failure of the state government to solve conflict between NTPC and CMC, (c) failure to undertake efforts for capacity building of CMC. Nonetheless, profits seem to range between ……. % in last few years[[2]](#footnote-3).

PPPs are supposed to free public resources. But, the investment pattern in the pilot project for 24x7 Supply in Nagpur indicates that the entire investment of INR 22 Crores was made from public funds more specifically from the central government’s scheme (viz., JNNURM), which included provision for assured profits for the private operator[[3]](#footnote-4). It is reported that, despite such support for capital investments from government agencies, the private operator tends to concentrate on service provisioning to the better-off sections of the society and neglect service provision to the sections deemed unable to pay for the services. Some news reports indicate that the water bills for some consumers rose to five times in the pilot zone, though there was no hike in the tariff. As per the explanation from NMC, the steep increase in water bills could be due to the new practice of charging consumers based on the meter readings. But this indicates that sufficient efforts were not made to make people aware about factors such as in-house leakages beyond the point of meter.

Similarly, lack of sufficient efforts for building awareness, for ensuring transparency as well as participation, and for building confidence before engaging in PPP initiatives led to suspicion and conflicts over the issue in the town of Latur. Further, failure of efforts to resolve the conflict and secure the legitimacy and acceptance from the citizenry resulted in suspension of the Latur PPP project.

Based on these short case studies, it could be suggested that there is need o undertake detailed and objective studies of these efforts, driven by genuine will to understand the strengths and weaknesses of the reform measures initiated in the country. Without such studies, it would be difficult to argue for wide-scale replications of such measures.

**Reforms: Some Key Challenges**

The review of urban water reform measures from different states of India as well as of actual reform initiatives clearly indicates that urban water reforms are still in the nascent stage. The resistance from certain stakeholders to various reform measures—such as restructuring of para-statals—certainly poses barriers to reforms. However, the challenges are beyond just finding suitable structural models, restructuring the old institutions, or ensuring cost-recovery. This section summarizes some challenges in efforts to achieve water security and sustainability through reforms.

***Bulk Water Availability***

Apart from these issues internal to the ULBs and reforms, certain broader, external issues also pose challenges. Especially, the issue of availability of bulk water has already become critical for many towns and cities, especially in the peninsular India. Trends in critical factors such as increasing population, increasing economic activities, and changing life-styles indicate that this problem is going to aggravate in future. This might lead to contestation and conflict among and within cities, between cities and villages, and between cities and industries. For example, the Latur city shares the single source of the Manjra Dam with four other smaller towns in the district, two sugar factories, and thousands of sugarcane cultivars. This competition over water has forced the Latur municipal council to bring water from the *Ujani* reservoir located about 280 kilometers away. It needs to be noted that the Manjra basin is one of the most water-scarce basin in Maharashtra. Similarly, the city of Chandrapur looks at the river *Vardha* as an alternative water source, but it is already over-exploited. The same river is planned as the source of water for the new private power plants and cement industries coming in the basin. The city of Udaipur in Rajasthan has different types of water sources, right from the traditional systems (lakes and bawadis), informal system (tankers brining in groundwater from the periphery of the town), formal market-based system (canned and bottled supply), and public supply systems. However, it is already witnessing the increasing pressure for bringing more water from distant dams, where local people are up in arm against siphoning of their water by cities. Thus, across the country, availability of bulk water surely is an issue that would pose a bigger challenge in future.

***Large-scale Practice of Self-Provisioning***

In almost all large, medium, and small cities and towns, the practice of self-provisioning of water is found on a wide scale; this is true even for cities experiencing water-stress. The main source of water for self-provisioning is the groundwater from the cities or from peri-urban areas. From the perspective of reforms, availability of an alternative source seems to prove a critical barrier to successful implementation of the principle of cost recovery. Water-users shift to alternative sources, if municipal water becomes expensive. From the perspective of consumers, it is the most effective coping strategy to ensure water-security by being self-reliant. However, in the situation of scarcity, poor consumers cannot afford water from either of these sources. Recently, legislations for groundwater control have been enacted by different states (e.g., one for the Chennai metropolitan area); however, its wide-scale implementation would face severe public protests.

***Slow Pace of Fiscal Decentralization***

The process of fiscal decentralization to ULBs has been very slow in India except some southern states. States such as Maharashtra, Uttar Pradesh, Bihar, Andhra Pradesh are far behind in taking concrete steps for sharing by the state governments the revenues as well as revenue sources with ULBs (US AID 2006). SFCs, which are expected to initiate and monitor the process of fiscal decentralization have been barely active in these states. In the states where SFCs are formed, they do not have mandate to enforce their own recommendations on transfer of state funds to ULBs. This has seriously affected the credibility of the ULBs to attract private finances. In some states like Maharashtra, the state-level parastatal went ahead raising finances through bonds. However, as the ULBs are not financially capable of repaying the loans forwarded to them, the burden of repayment remained with the parastatal, defeating the original purpose of raising the external finance.

***Viability of the Cross-Subsidy Model***

The example of Tiruppur PPP highlights the issue of viability of cross-subsidy model and its capacity to ensure equitable access for poor to water and sanitations services. Incidentally, the cause underlying problems in Tiruppur—the impact of global slowdown resulting in decline of industrial water demand—is peculiar and would not be applicable to other cities. However, even in other town this issue is critical.

At the conceptual level, cross-subsidization, especially at the ULB level, requires an economically strong user-base within the city, which can subsidize lower tariff for poor. Almost in all metropolitan cities and many industrial cities, such a strong user-base does exist, which makes the cross-subsidy model feasible. Further, large supply systems in such cities do benefit from economies of scale, which allows further lowering of water tariff.

However, in majority of the small and medium towns (SMTs), economically-strong industrial, commercial, or high-worth domestic consumers are not present in adequate number. This poses serious threats to the viability of the model of cross-subsidy. Another important factor affecting the wide-scale applicability of the cross-subsidy model is the costs of procurement of water. Cities situated in regions with water-stress incur huge costs for procuring water from sources at long distances or from groundwater sources. Adherence to cost-recovery principle would raise the average tariff for such cities to a very high level, creating highly skewed distribution of urban water tariffs across the state. The higher average costs faced by such cities would also make cross-subsidies unviable.

This is not argue against the provision of subsidy or cross-subsidy, but to only highlight the problems in viability of the cross-subsidy model.

***Political Economy around Urban Water Supply***

One of the commonly cited impediments to implementation of reforms is the lack of ‘political will’. The issue of ‘political will’ emerges from the political economy around the urban water sector which works against the reforms. In other words, reforms become another theatre for battle among various interest groups. As the dominant groups attempt to continue their influence on the governance of the sector, they choose to support or oppose certain reform measures based on the implication of the reform measure for their own interests.

This is evident from continued existence of state-level parastatal bodies and resistance to their restructuring in various states like Maharashtra, Orissa, Rajasthan, and UP. The resistance to reform can come in different forms, including the usurpation, sabotaging, or manipulation of the reform process, which leads to conflict and derailing of reform. The BOT case of the Ulhasnagar Municipal Corporation (UMC) in Maharashtra could be a case in point. Gammon India filed a lawsuit against UMC and Pratibha Industries in the Mumbai High court, accusing non-compliance with the bidding process and political favoritism for selecting Pratibha Industries.

A large number of private water tankers plying through city roads is now a common sight in both, large cities and smaller towns. Water tanker lobbies are powerful and have vested interests delaying expansion of the public water supply system. Tanker lobbies, private contractors and plumbers, city councilors, landowners from peri-urban areas are some of these strong interest groups. One of the earlier efforts in the city of Pune failed due to strong opposition from private contractors who had active linkage with local politicians (Z’erah 2006).

Political economy also affects the affairs at the state and central levels. Even the allocation of capital grants to ULBs from scheme such as JNNURM, shows highly skewed distribution titled towards richer cities (Bhide et al 2010). It is a known fact that, in most states, patronage of dominant central or state level politicians determine the volume of grants and assistance to cities and towns.

***Alienation of Stakeholders from the Reform Process***

The political economy appears to be acting even in the process of defining the reforms. The policy discourse as well as the underlying theoretical discourse is monopolized by the international financial agencies. Hence, reform remain an exotic entity for most of the stakeholders, though they experience an urgent need for change in the current situation for better, which the reform are supposed to affect. This alienation is further aggravated by the opacity, lack of participation, and ad-hocism in functioning of government agencies involved in the process of designing and implementing reforms. Even the newly-formed IRAs have been accused of such opacity and ad-hocism. The alienation preempts any possibility of citizens owning up the reform, and, instead, breeds suspicion and resistance to reforms. The process of setting up the water IRA in Maharashtra and its functioning is a case in example**.**

***Quality and Acceptability of Content of Reform***

Apart from alienation and resistance, the monopoly and opacity in reform has significantly affected the quality and acceptability of the content of reform measure. For example, the over-emphasis on financial health of utilities in the mainstream model of reform is seen as the main culprit for the neglect of principles of access-equity and affordability. Similarly, single-minded preoccupation with reduction of the role of the state agencies and facilitating PSPs has led to blindness to the ground realities in the Indian situation, which, often, make these prescriptions irrelevant and unrealistic. Further, the cookie-cutter approach to the design of regulatory system with sole preference for the North American design of IRAs is found to be highly misplaced in Indian situation.

***Transparency and Participation in PPP Governance***

The problems created by alienation and opacity are more pronounced in implementation of the PPP initiatives, which are the front-line reform measures. The PPP contracts are devised and finalized without informing or consulting the stakeholders, especially the consumers and citizens. In some cases like Sangli in Maharashtra, even the municipal council was kept in dark while signing the PPP agreement. Many PPP contracts make private players immune from answering the queries under the RTI law. Lack of transparency and participation of stakeholders have made PPP contracts an invitation to suspicion, resistance, and conflict. This is evident in the controversies around PPP contracts in cities like Latur, Sangli, Nagpur, Pune, and Delhi.

The discretionary powers given to states for implementing the provision of 74th Constitutional Amendment Act has allowed the state governments to delay, sabotage, or undermine the community participation law. This has severely affected institutionalization of citizens’ participation in municipal governance.

***Municipal Capacities***

Most ULBs, even in the large cities, suffer from serious capacity problems. Many of the departments of ULBs are under-staffed. There is serious and wide-spread problem of lack of technical, financial, managerial capabilities in most of the departments of most ULBs in the country. Absence of standard operating procedures make the operations ad-hoc and haphazard; and they are in dire need of minimum level of stream-lining.

There is an urgent need of improving the staffing patterns and structures, the ways of recruitment, and the incentive and disincentives structures. The related institutions, such as Directorates of Municipal Administration, need to be empowered to undertake appropriate measures.

# Reforming the Reforms: Lessons and Pathways for Future

**Paradigmatic Shift and Reforming the Reforms**

Some lessons and recommendations emerge from the discussion in the earlier sections of the paper, which are briefly mentioned in this section. It needs to be noted that they are just indicative of the changes needed in the current design of reform, and emerge primarily from the concern for ‘water security and sustainability’. This concern also points at some broader lessons, which are for the sector as a whole, and are beyond the purview of the reform. However, reforming the discourse, policies, and practices of reform, in a comprehensive manner, is not attempted here.

In the beginning, what primarily emerges from the discussion is not just limited perspective the reforms take, but also the limitations of the current perspective on the urban water sector. As a result, what is needed is a paradigmatic shift in the way the sector is viewed currently, mainly by the mainstream agencies. Similarly, the need for the fundamental shift in thinking and action on the reform also emerges from the discussions in the previous sections. The subsequent discussion on recommendations elaborates on some dimensions of this paradigmatic shift.

The water scarcity and intense contestation over water, especially in the peninsular India, necessitates the paradigmatic shift. In essence, the urban water sector should not be viewed only as a piped-water system, supplying potable water and relying on centralized large sources. Rather, it should be seen as a combination of different types of decentralized systems, drawing water from different sources of different quality and supplying this different quality of water for different end-uses separately.

It needs also to be noted that the attributes of Environmental Sustainability and Adequacy are intricately linked. Though the measures for ensuring the environmental sustainability—such as Groundwater Regulation and Water shed Development—are often considered beyond the purview of the urban water sector, they have serious implications for the sector. Similarly, social and ecological disruptions caused by dam and other projects for urban water systems are not included in the debates in this sector. All these issues need to be considered as part of the sectoral issues and need to be integrated in planning and governance of the sector.

In this regard, the ULBs and the state urban development departments should at least initiate measures to enhance the quality and quantities of water storages—both, ground and surface sources—within the city limits. However, there is hardly any discussion on this issue in the policy documents.

Considering the disparities of immense scale and of diverse dimensions that exist in Indian cities, ‘Equity’ should be made the center-piece of the planning perspective and also of the reform initiatives. The measures like targeted subsidies and life-line tariff should not come as an afterthought. This is not only a suggestion emerging from normative considerations, but is also a precondition for political feasibility of reform. The limitations of market-based mechanisms in achieving equity-related objectives need to be acknowledged in this regard. Other measures for addressing the equity concern, both the physical and economic dimensions, should be actively considered.

Looking at the limitations of the cross-subsidy model especially in the SMTs, adequate financial and institutional measures would be needed to ensure access for poor. The instrument of cross-subsidy is still important in ensuring economic access, especially in metropolitan and industrial cities.

The assured, significant, timely, and 'no-strings-attached' flow of resources, especially through robust and independent mechanisms like State Finance Commissions (SFCs) is the key to making ULBs work effectively an sustainably. In order to achieve this, the central government should ensure strict adherence to the reform-related conditionalities accepted by the states. Delinking of ‘reform’ from ‘projects’ under JNNURM has set a dangerous precedence.

Similar paradigmatic shift is necessary at the levels of discourse, policies, and practices, when it comes to sectoral reform. True and meaningful participation in the debate over reform and willingness to abstain from any fundamentalist positions would pave way for evolution of reform measures that are qualitatively superior and widely owned. Participatory debates will ensure addressing of genuine and legitimate concerns of all stakeholders, especially the sections often neglected by the mainstream agencies—the small consumers, citizens, unorganized employees, and civil society organizations. Moreover, such debates will also help all stakeholders to appreciate the other standpoints on the key issues. This would not only dispel apprehensions and suspicion—which surround the reform initiative currently—but would also prove an effective antidote to activities and interference by vested interests.

As the reflection of the genuine urge underlying reform, transparency and accountability should be ingrained in all mechanisms and provisions of the reform instruments. In this regard, the current design of IRAs in the water sector fares very poorly. The problems with the structure and functioning of the current water IRAs have been discussed separately in this volume. But considering the special needs of the urban water sector, the IRAs (whether they are water sector IRAs or municipal services IRAs) should be entrusted with—and empowered accordingly and appropriately—the responsibility to regulate all aspects of retail level regulation. They should be able to regulate not only tariff but all economic, financial, technical, ecological, and social aspects of tariff and allocations. There certainly are some problems with the current design of IRA, which make it expertocratic, technocratic, and undemocratic. However, it is expected that the model of reform that would evolve through a wider debate would address these issues.

Technical, accounting, and managerial capabilities at the municipal level is another vexed issue that needs a separate and detailed discussion. The point that needs to be made here is that the measures aimed at addressing this concern should be comprehensive, genuine, and relevant. The ritual of classroom sessions or crash-courses for employees at the advanced age is simply an eyewash. Similarly, privatization related measures are not a panacea for the capability deficit. The lack of capabilities rules out the possibility of proper design, implementation, or monitoring of privatization contracts. The opacity and political economy around governance at the municipal level aggravates these problems further, making privatization or PPP contracts a new opportunity for cronyism, collusion, and corruption.

@@@

**References**

Hofwegen, Paul Van 2007 - Water Security: Everybody’s concern, Everybody’s responsibility, draft discussion paper, 13 June 2007, UNESCO-IHE- Institute for Water Education , Delft Netherlands

Lundqvist et al 2003 - Jan Lundqvist, Paul Appasamy and Prakash Nelliyat, Dimensions and approaches for Third World city water, 19 November 2003, Royal Society Publishing, Sweden

Shultz & Uhlenbrook 2007 - ‘Water Security’: What does it mean, what may it imply? Draft discussion paper, 13 June 2007, UNESCO-IHE- Institute for Water Education, Delft Netherlands

Valinas et al 2010 - Mari´a de Losa´ngeles Garci´a Valin˜as, Roberto Marti´nez Espin˜eira & francisco gonza´ lez-go´ mez†, Measuring Water Affordability: A Proposal for Urban Centres in Developed Countries, Water Resources Development, Vol. 26, No. 3, 441–458, September 2010, Routledge, Taylor and francis Group

Foster and Yepes 2006 - Vivien Foster and Tito Yepes, Is Cost Recovery a Feasible Objective for Water and Electricity? The Latin American Experience, World Bank Policy Research Working Paper 3943, June 2006

Rogers et al 2002 - Peter Rogersa; Radhika de Silva and Ramesh Bhatia, Water is an economic good: How to use prices to promote equity; efficiency; and sustainability, Water Policy 4 (2002) 1–17, [www.waterpolicy.net](http://www.waterpolicy.net)

Sriniwasan 2008 - Veena Srinivasan, An Integrated Framework for Analysis, of Water Supply Strategies in a

Developing City: Chennai, India, a dissertation submitted to the interdisciplinary program in environment and resources and the committee of graduate studies of Stanford University in partial fulfillment of the requirements for the degree of doctor of philosophy

WB 2008 - Phase II – Benchmarking Urban Water Utilities in India, Water and Sanitation Program-South Asia

The World Bank, September 2008, www.wsp.org

Raghupati et al 2005 - Usha P. Raghupathi, Status of Water Supply, Sanitation and Solid Waste Management in Urban Areas, Research Study Series No. 88, National Institute of Urban Affairs, June 2005

(GOI 1985, 92,) – Seventh and Eighth Five Year Plan of India, Planning Commission of India, [www.planningcommission.gov.in](http://www.planningcommission.gov.in)

WB 06 - INDIA: Water Supply and Sanitation, Bridging the Gap between Infrastructure and Service, Background Paper-Urban Water Supply and Sanitation, India Country Team, Energy and Infrastructure Department, South Asia Region, World Bank, January 2006, [www.worldbank.org](http://www.worldbank.org)

ADB 07 – 2007, Benchmarking and Data Book of Water Utilities in India, A partnership between The Ministry of Urban Development, Government of India and Asian Development Bank, [www.adb.org](http://www.adb.org)

GOI 2002, 07 - Ninth and Tenth Five Year Plan of India, Planning Commission of India, [www.planningcommission.gov.in](http://www.planningcommission.gov.in)

GOI 1985 - Seventh Five Year Plan of India, Planning Commission of India, [www.planningcommission.gov.in](http://www.planningcommission.gov.in)

(SANDRP 99) Assessment of water supply options for urban India, Large Dams have no CaseA submission to

World Commission on Dams, Thematic Reviews: Options Assessment, On behalf of South Asian Network on Dams, Rivers and People (SANDRP), November 1999

1. Incidentally, this same excuse is put forth by the administration of Municipal Corporation of Greater Mumbai for its failure in maintaining the service levels in the metropolis (White Paper by MCGM on Water Supply) [↑](#footnote-ref-2)
2. Source: Interview of the Chartered Accounts of Gurukripa Associates [↑](#footnote-ref-3)
3. Recently, NMC has also invited to invest in the up-scaling the 24x7 concept for whole of the city. [↑](#footnote-ref-4)