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Policy Challenges and Strategies for Urban Water Supply in Odisha

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Abstract

Water has competing demands from different sectors but drinking water gets precedence over all of them, followed by agriculture and allied sector, power, industry and others. Unfortunately, India has grossly neglected its water management, which, aided by the population growth has resulted in a steep decline in the per capita availability of water to 1,544 cubic metres per annum (cumpa) in 2011, from 5,177 in 1951, compared to the global average of over 6,000 cumpa. The situation is expected to further deteriorate with the gradual melting of Himalayan glaciers on account of climate change, which according to a study is likely to reduce the per capita water availability in the country to 1200 cumpa by 2030. Although, Odisha is relatively better off in this regard with per capita water availability of over 3,200 cumpa, the rapid economic growth and urbanization of the state call for a strategic and judicious policy on water use, pricing, allocation, conservation and security.

The instant policy paper focuses on urban drinking water alone, highlighting the current situation that is characterized by sharp variations across the state and inequitable distribution, especially in respect of slums and informal settlements. It recommends a strategic approach based on demand and supply management coupled with appropriate institutional arrangements in order to ensure equitable and sustainable urban water supply throughout the state. The primary focus is on role delineation, making the urban local bodies primarily responsible for water supply, corporatizing PHED, encouraging PPP, especially in O&M, appointing of an independent regulator, developing a comprehensive medium and long term investment and financing plan, encouraging rainwater harvesting to both augment water supply and recharge ground water, etc.

The paper recommends an integrated approach to developing urban water supply, sewerage and drainage and treating them as essential urban infrastructure on par with roads and power. It also recommends advance source development for drinking water purpose at the time of harnessing water for other uses as well.

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Outline of the Policy Problem

a. Full statement of the problem

- Access to safe drinking water is a fundamental necessity of life. Accordingly, the right to water has to be recognised as a basic human right. Although, Odisha is relatively better endowed with fresh water resources with a per capita availability that is more than double that of the national average of 1,545 cubic meters per annum, and the State Water Policy (2007) accords first priority to drinking water, rapid economic growth and urbanisation in the state along with the need to ensure water security for future have together made it necessary for the government to plan for its cities to grow with optimal use and minimum waste of water.
- Today, the urban population of Odisha is less than seven million, accounting for hardly 17% of the total population compared to the national average of 31%. But this scenario is fast changing with increasing urbanisation; however, the provision of urban water supply is lagging behind, particularly in respect of slums and informal settlements. As a result, access to safe drinking water poses a serious challenge, especially in meeting the national service level benchmarks (SLBs) in respect of physical coverage and household connections. In 2011, the average percentage of household connections in Odisha was only 19% (2011), but when it comes to the overall quantum of urban drinking water supply, the state is comfortably placed with a total production of 800 million litres per day (MLD) as against a total demand of 798 MLD. Hence, the main problems facing the state relate to adequate coverage, efficiency in service delivery and equitable distribution, which makes 'water supply for all' the primary objective of the state. The current performance of Odisha compared to the national service level benchmarks is given in Annexure-I.
- Today, sharp variations in water supply across the state are a predominant feature, reflecting poor planning. The intra and intercity per capita water supply varies between 30 litres per capita daily (LPCD) to 280 LPCD. Access to safe drinking water in slums, which account for

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nearly 25% of the urban population in the state, is extremely poor in terms of household connections and they are largely dependent upon stand post connections and hand pump tube wells, which increases the risk of contamination and associated health hazards. The average percentage of non-revenue water in the state is as high as 45%. Adding to that, low water tariffs and low collection efficiency, which is around 49%, have resulted in hardly 30% of the operation and maintenance (O&M) cost being recovered. As a result, the financial viability of most of the water supply projects in the state stand adversely affected, leading to poor operation and maintenance and inadequate capacity addition. Issues of water pollution, reckless ground water exploitation, water wastage, and poor water conservation also need to be addressed.

- There are serious problems on the institutional and governance front too. The Government is yet to develop a comprehensive urban drinking water policy; urban local bodies are yet to take the responsibility of water supply upon themselves; the Odisha Water Supply and Sewerage Board Act never really became operational; budget allocation based on clearly laid down targets and priorities is yet to develop; pro-poor planning in terms of earmarking a separate budget for urban poor is yet to be established; tariff fixation is not linked with cost recovery; and comprehensive investment plan for the medium and long term is by and large absent.
- After the 74th Constitutional Amendment Act (CAA), 1992, the responsibility of water supply service now vests in the ULBs, but due to lack of financial, technical and managerial capacity among them, the State Public Health Engineering Organisation (PHEO) continues to be responsible for urban water supply. However, PHEO has recently entered into a memorandum of agreement (MoA) with 20 out of the 106 ULBs in order to make itself more accountable to those ULBs in terms of planning, project implementation and service delivery, but it is yet to become fully operational. As regards public private partnership (PPP) arrangements in the water sector in the state, it is still at a very nascent stage.
- The main challenge before the state, therefore, is to create an enabling

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policy environment and legal framework for carrying out necessary institutional, governance, economic and financial reforms in order to ensure equitable, affordable, efficient, accountable and financially sustainable urban water supply services in the state.

b. The problem in Indian historical context

- Historically, urban water supply system in India has evolved with the requirement to provide clean water to safeguard public health. The First Five Year Plan (1951-56) focused on the coverage aspect. In the Second Five Year Plan (1956-61), the State Public Health Engineering Departments were strengthened. In subsequent five-year plans, water sector was strengthened by increased financial outlays. In 1987, the National Water Policy focused on protection of groundwater and mapping water quality. In the Eighth Five Year Plan (1992-97), water supply was linked to sanitation, emphasis was laid on treating water as an economic good, and ULBs were required to carry out operation and maintenance (O&M) of water supply. The Ninth Plan (1997-2002) emphasized 100% coverage of households, decentralization, and privatization of water supply service. In the tenth plan (2002-07), the focus was on 100% coverage, cost recovery, changing the role of Government from being a service provider to a facilitator, institutional restructuring, service improvement and people's participation. And the same focus continues in the Eleventh Five Year Plan (2007-12). All through the eleven plan periods, however, coverage has not kept pace with urbanization and water security has remained a perennial problem (Panagare *et al.*, 2004).
- The Ministry of Urban Development (MoUD), Government of India (GoI) in its recently published "Advisory Note" (MoUD, 2012a) lays emphasis on service improvement plans; efficiency of capital investment; role delineation and governance of urban water supply and sanitation (WSS) service providers; cost effective financing of urban WSS operations and infrastructure development programme; cost recovery through user charges; appointing of an independent regulator for urban WSS services; and encouraging PPP projects.
- The "Working Group on Urban and Industrial Water Supply and

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Sanitation for the 12th Five Year Plan" in its report submitted to the Planning Commission has highlighted the following critical challenges in urban water supply (PC-WG, 2011):

- Growing water scarcity and water pollution affecting public health.
- Impact of growth of cities and industries on the use of water and discharge of waste.
- Rudimentary water demand and supply estimates leading to poor accounting and poorer planning.
- Unregulated exploitation of groundwater in the city.
- PPP is not bringing in much needed financial investments.
- Intermittent water supply poses problems to metering, as most water meters register air flow during non-supply hours.

c. The problem in global context

- As per the WHO, more than one billion people in the world today lack access to safe drinking water. India is a signatory to the UN and has committed to achieve the MDG in which the goal for water supply is to reduce by half, the proportion of people lacking access to safe water supply by 2015, which applies to Odisha as well.

d. Current symptoms of the problem in the State

- Across the ULBs:
 - Coverage of households by piped water supply varies from 7 to 80%.
 - Duration of supply is 1-4 hours per day.
 - Per capita water supply varies between 30 to 280 LPCD
 - Over one-third of the 1800 odd wards are either only partially covered or not covered at all
 - Non-revenue water varies from 20 to 83%
 - Recovery of O&M cost averages to 30%
 - Slum dwellers lack access to household connections.
 - Water quality varies between 84% to 92%.

e. Consideration of the underlying basic causes of the problem

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- The underlying factors affecting urban water supply in Odisha are outlined in the table below:-

| Problems/Issues | Underlying basic causes |
|---------------------------------------|---|
| Demand - supply gap | Spatial growth of city proliferation of slums rising water demand due to increased living standards inadequate development of water source and treatment inadequate water distribution network high cost of urban water supply projects and financial constraints wastage of water poor conservation of water round (especially rainwater harvesting both for usage and recharging ground water) |
| High percentage of Non -Revenue Water | physical leakages water consumed but cannot be billed due to lack of volumetric measurement illegal connections lack of household and bulk metering |
| Low O&M cost recovery | low customer base low fixed tariff increasing numbers of public stand posts (free distribution) |
| Poor Water Management | ULBs lack financial, technical and managerial capability Inadequate water quality monitoring and surveillance Waste water recycling is negligible Water pollution is rampant Unregulated exploitation of ground water PPP is still in a nascent stage There is limited capacity and availability of private sector Lack of legal framework for sharing of risks in PPP projects Lack of regulator |

Policy Strategies

- In order to achieve the policy goal of an equitable, affordable, financially sustainable, efficient and accountable urban water supply service, the following policy objectives have to be addressed urgently:
 - Providing a comprehensive policy, legal and regulatory framework for providing universal access to safe drinking water within the overall water allocation and pricing and water security policy.
 - Treating drinking water and sewerage as essential urban infrastructure on par with roads and power.
 - Role delineation between State Government (policy, budgetary support, coordination and monitoring), ULB (planning and prioritization; partial financing); service provider (PHEO/ PPP player – service delivery); and regulator (tariff fixation).
 - Preparing a roadmap for the implementation of 74th CAA and making PHEO fully accountable to ULBs.
 - Creating an enabling environment for adoption of SLBs in service delivery.
 - Identification and implementation of key strategies to increase coverage and efficiency such as 24X7 (initially on a pilot basis); metering, computerized billing, etc.
 - Preparing short-term, medium term and long-term investment plans for undertaking water supply projects in a cost-effective, equitable and sustainable manner.
 - Enhancing water security by improving/ augmenting existing drinking water sources, conjunctive use of groundwater and surface water sources, rainwater harvesting, water recycling, etc.
 - Transforming the existing PHEO into a corporatized utility.
 - Formulating a comprehensive strategy for recovery of O&M cost in the short to medium-run and capital cost in the long run.
 - Developing a framework for routine water quality monitoring and surveillance activities.

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- Creating an institutional mechanism for effective coordination between the departments of water resources, agriculture, rural development, urban development, energy, industry, etc., in order to ensure proper allocation, planning, inter and intra-sectoral subsidization, proper water pricing, etc.
- Comprehensive demand management and water conservation through IEC activities aimed at community participation.
- Curbing water pollution through integrated planning of water supply, sewerage and drainage.
- Tariff rationalization.
- Promotion of PPP, especially in O&M.
- Appointment of an independent water regulator for tariff fixation, building water security, etc.

Policy alternatives for urban water supply

- **Discussion and assessment of alternative generic policy instruments**
 - The generic policy alternatives to achieve the goal of an efficient, affordable, equitable, sustainable and accountable urban water supply system in the state are as follows:-
 - Business As Usual
 - Service delivery by ULBs
 - Public Private Partnership
 - Privatization
 - Corporatization of PHEO and MoA with ULBs
 - **Business as usual (BAU)** implies that PHEO would continue to be the service provider, and the State Government shall continue fund infrastructure, fix tariff and regulate the service. It may be noted that majority of urban water supply systems in the world are managed by public sector, as urban water supply is a natural monopoly and a merit good; but BAU faces serious limitations in terms of financial, technical, managerial and institutional capacity, and public accountability.

- **Delivery of urban water supply service by ULBs** can be achieved through multiple sub-options: (i) ULBs can operate the service as an integral part of their core functions by taking over the complete responsibility, including planning, finance, construction, operations, maintenance and collection of water charges; (ii) can set up a dedicated water department with ring-fenced manpower and budget; (iii) can set up a corporation or board for managing the responsibility (more suitable for larger ULBs); (iv) can enter into an agreement with a regional water supply entity (more suitable for smaller ULBs); or (v) can outsource the O&M function to a private agency. In all these sub-options the water supply assets need to be transferred to the control of the ULB and the planning and funding of water supply infrastructure has been primarily the responsibility of the ULB. To generate funds for capital expenditure, the ULB, apart from receiving state funding can access the market by raising finance through bonds, and levy water tax as an integral part of property tax. Revenue expenditure may be met through water charges. The main advantage of ULB management is that it facilitates direct accountability to the people. It also facilitates better coordination with other municipal activities such as sewerage and drainage. The ULBs can also effectively identify the poor and cross subsidize them. But, the disadvantage is that the ULBs lack sufficient technical, managerial and financial capacity for implementing these sub-options.
- **Delivery of water service through PPP mode** may ease the problems of financial constraints and lack of institutional capacity, but as of now there are very few examples of a full-fledged private provider. Current models of PPP in India are mainly concessions for water treatment plants, bulk water supply, service contracts for billing, collection and metering, improving distribution system, etc. Further, most PPP projects in India are funded by the water utility and private entity only brings in managerial expertise. Wherever the private operator invests in capital, then as per agreement they are

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allowed a higher tariff to make the project viable. The water tariffs in the current PPP projects in the country are found to be very high (more than Rs. 12 per kilo litre). The private sector finds the risk to be considerable because they have to deliver the service as per pre-determined performance indicators. According to the Planning Commission Working Group report, private sector is reluctant to enter into capital and operational investment (PC-WG, 2011). Nevertheless, the private sector is already playing a vital role in water supply as an O&M contractor. Although its capacity may be somewhat limited, its role must be recognized.

- **Privatization of water supply** was started in the UK in the early 1980's. The reform led to reduction in role of government and greater private sector involvement. But the Government retained its control through regulation. Regulation is essential to avoid exploitative pricing and to ensure quality standards. However, privatization failed in many developing countries, particularly in Argentina (Buenos Aires), Indonesia (Jakarta) and Philippines (Manila) due to exploitation of consumers, leading to civic opposition, which resulted in cancellations and renegotiations of concession agreements.
- **Corporatization of PHEO:** The service delivery through PHEO remains central to urban water supply in the state. But the PHEO should be corporatized and a corporatized entity may be created on a pilot basis for Bhubaneswar city and three to four regional entities may be created for the remaining ULBs by adopting cluster approach. The advantages of corporatization are that it offers professionalization and management independence, but the disadvantage may lie in its becoming excessively commercial, which can be check-mated by the independent regulator.

Evaluation of the Policy Alternatives

- It is evident from the above analysis that no single institutional form can serve as the one-size-fit-all solution for urban water supply in the state, as the circumstances may widely differ from ULB to ULB. Hence, the

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present challenges have to be addressed through a combination of alternative policy options.

- The most appropriate policy approach in respect of Odisha appears to be one that confines the government's role to that of a facilitator and funding agency; and makes ULBs responsible for water supply, allowing them to choose the management model they wish to adopt. As regards privatization, it does not appear feasible at this juncture due to the capital intensive nature of water supply projects, political resistance to linking tariff to cost recovery, and the lack of paying capacity of urban poor. As such, PHEO may have to continue with its function as the primary service provider, but duly restructured for ensuring greater accountability to the ULBs. In this regard, the following measures, which are a hybrid of different options, appear both desirable and implementable:

- Government to create the overall enabling environment as outlined in para 2.1 above.
- PHEO to enter into a MoA with all individual ULBs for agreed service levels. The service improvement plan to be vetted by ULB Council before furnishing it to the Government for funding. The assets may be transferred to the ULBs.
- Demand management through pricing, volumetric metering and conservation.
- Supply management through proper source development, reduction in transmission and distribution losses, optimal mix of surface and ground water, rainwater harvesting, etc.
- PHEO to facilitate PPP projects for bulk water production, supply, metering, billing and collection in order to improve service delivery efficiency and O&M cost recovery.
- The Bhubaneswar water supply system may be corporatized as a pilot project. The experience gained from the pilot may be used subsequently to cover the remaining ULBs.
- Regional PHEO entities may be created in order to cater to the

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requirements of the other ULBs.

- A clear policy on inter and intra sector cross-subsidization.
- Water tax to be levied as an integral part of property tax.
- Integrated approach to water supply, sewerage, drainage and recycling.
- Focus on rainwater harvesting as a means to augment urban water supply.
- An independent regulator may be appointed to regulate the service providers and water tariff.
- Promote PPP.
- Develop a comprehensive investment and funding plan.
- Government to regulate water pollution and exploitation of ground water.
- Regardless of the governance and institutional structure which is put in place, the basic strategies at the operational level remain the same. For example, universal access through demand and supply management; reducing non-revenue water through bulk and individual metering; increasing efficiency in revenue collection through technology and outsourcing; and making the service affordable to the poor through cross-subsidization, adoption of volumetric tariff, etc. The detailed strategies to increase household's access and reduce operational inefficiencies are described in **Annexure-II**. The strategies to meet the policy goals outlined at para 2.1 above are described in **Annexure-III**. The implementation of required water infrastructure in all the ULBs will require an investment of Rs. 3,900 crore approximately as elaborated in Annexure-IV. The costs include augmenting existing infrastructure, covering new areas (including slums), water and energy audits, hydraulic modeling, procurement of materials and equipment and their installations, IEC activities, capacity development, etc. The proposed policy will result in greater accountability of PHEO to ULBs and direct participation of ULB Council in service improvement, sustainability in O&M, water conservation by appropriate pricing and plugging of

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leakages, etc. The overall benefit will be better public health and improved living conditions. Better service should lead to greater consumer satisfaction, which is expected to promote consumer's willingness to pay more for better service.

Assessment of the Policy Environment

- India's legal and regulatory framework for water sector is still evolving. The various enactments and policies relating to water formulated by the Central and State Governments are given in **Annexure-V**. The 2002 National Water Policy encourages private sector investment in the water sector. The policy provides for user pay principle and consumers are to be charged as per actual amount of water consumption with a view to recovering the O&M cost. It gives priority to improving water efficiency and water management. On the investment side, there is increased financial support from the Central Government through schemes such as the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) and the Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT). A number of mandatory reform measures are mandated for ULBs to access JnNURM/ UIDSSMT funds. Although the market based system to access fund has not yet matured in India, one finds increasing number of PPP projects in water supply and increasing private sector investment. As the water sector matures, regulatory mechanism and market based financing system will come into play. Government of Odisha has recently established the "Odisha Urban Infrastructure Development Fund" to finance urban infrastructure projects by providing long tenure loans at concessional rates and viability gap funding wherever required, which can be accessed by ULBs as well as private players as may be.

Stakeholder analyses on water supply management

- The primary stakeholders of the proposed policy are the Government, PHEO, ULBs and the consumers. The secondary stakeholders are private firms indirectly working for the service provider. The State Government is the driving force behind formulation of the policy.

The proposed policy will influence the future of PHEO and therefore it would

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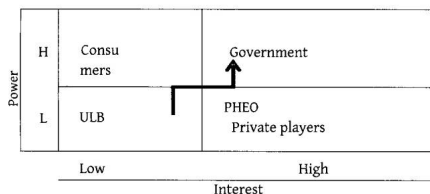


Figure1: Interest and power of stakeholders in the proposed policy

strive to protect its interests. The consumers will look for good service and reasonable tariff. But the challenge is to push the ULBs to the centre stage.

SWOT Analysis

- The SWOT of the primary stakeholders, namely, Government, PHEO, Consumers and ULBs is given in the following table:
- The proposed policy will have to be driven by the Government. PHEO is

| Strength | Weakness | Opportunity | Threat | Resource |
|---|--|---|---|---|
| Government | | | | |
| • Enabling 74 th CAA | • Lack of policy • Capacity constraint at implementing agency level • Financial constraints | • Climate of reform • Decentralization • Performance incentives | • Financial unsustainability • Delay in project implementation | • Formulate policy • Role delineation • Encourage PPP |
| Service Provider (PHEO) | | | | |
| • Presence in ULBs • Technically experienced | • Lack of expertise in key areas • Poor accountability • Lack of incentives to improve performance | • JnNURM & 13 th FC mandate | • Non-Revenue Water • High Electricity tariff | • Capacity development through MoA • Accountability through MoA • PPP |

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| Consumers | | | | |
|---|--|------------------------|---|--------------------------------|
| • Rapid urbanization • Growing demand | • Consumer awareness • Lack of common forum for interaction | • Service standards | • Affordability • Unwillingness to pay | • Cross-subsidization |
| ULB | | | | |
| • Public interface • Political support | • Lack of Technical, managerial and financial capacity | • 74 th CAA | • Poor service delivery | • Water tax • Water charges |

expected to be favourably disposed, as they shall continue to discharge the role of primary service provider but in a corporatized format. The ULBs should be favorably disposed to it, as the PHEO will become more accountable to them. The consumers are expected to welcome the policy, as it would improve service delivery and make it more inclusive.

Political context (Assessment of the political environment in the country)

- Since water is a public good and right to water is a basic human right, there is enough political commitment to improve water services. However, there is need for greater political will to carry out reforms in terms of tariff rationalization; appointment of an independent regulator; reduction of non-revenue water; metering; rainwater harvesting, etc.

Conclusion

- The proposed policy addresses the current policy vacuum in pursuit of an efficient, sustainable, equitable and affordable urban water supply service in the state. It is based on an analysis of the underlying causes affecting the efficiency of the system as well as stakeholder analysis in order to come up with an implementable policy framework for corrective action. It provides for a comprehensive framework for greater efficiency, higher accountability, service level benchmarking, targeted approach in formulating and implementing annual plans, encouraging PPP,

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providing universal access to water supply, reducing non-revenue water, capacity development, water conservation, and corporatization, including piloting water corporatization in Bhubaneswar city. (4,000 words, excluding abstract).

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