Vidyasagar University Journal of Commerce
Vol. 23, 2018/ISSN 0973-5917

IMPACT OF SWAJALDHARA SCHEME ON THE RURAL LIVELIHOODS: A CASE STUDY OF PURBA MEDINIPUR DISTRICT IN WEST BENGAL

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Abstract

To achieve the U.N. Millennium Development Goal of securing "Water for All" which ensures sound health of rural people especially of women population and a sustainable environment, reforms in the rural drinking water supply sector in India were adopted in 1999 in India and Pilot Projects in some selected districts across 26 states were taken up. The basic concepts of the reforms include community participation in the planning, implementation, operation and maintenance of the schemes of its choice. This is a paradigm shift from supply driven to a demand responsive approach, centralised to the decentralised service delivery, from the top down to the bottom up approach and ultimately to change the role of the Government from that of a service provider to a facilitator. Swajaldhara is part of those reform initiatives in rural water supply & sanitation sector in India. On 25.12.2002, the Hon'ble Prime Minister of India, Sri Atal Bihari Vajpayee, launched Swajaldhara Scheme by scaling up the said Sector Reforms initiatives throughout the country. Water supply is ensured to the rural population by Piped Water Supply Schemes (PWSS) and Spot Source Water Supply Schemes (SSWSS). A SSWSS is adopted to cater smaller population and also where the raw water requires no or minimum treatment. Swajaldhara lies in this category. This paper attempts to analyse the impact of Bajitpur Matangini Swajaldhara Scheme (BMSS) on the livelihood of rural people of Bajitpur village of Purba Medinipur district in the state of West Bengal. A cost – benefit analysis in the form of simple income saving due to subscribing Swajaldhara, has been carried out. The impact of clean and pure water for drinking and sanitation upon health is explored. Also, secondary income from kitchen garden as a by-product of Swajaldhara has been taken into consideration. The study reveals that the overall impact of Swajaldhara scheme is positive and significant, and hence it demands a systematic and well-organised planning-execution approach to such sector-reforms projects.

Key Words: Reforms, Swajaldhara, Community Participation, Demand-responsive Approach.
JEL Classification: H44, H51, H75, I18, Q25.

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1. Introduction

"The primacy of drinking water supply in water law is undisputed. This is reflected in the recognition of the fundamental right to water (in Constitution).... This is also reflected in the importance that the central and state governments give to the fulfilment of drinking water needs. Thus, all water policies that prioritise water uses put in principle drinking water as their top priority" (Cullet, 2009). But in reality, lack of secure access to sustainable water supplies remains a major obstacle to efforts to reduce poverty around the world. The failure of previous supply-led approaches to realise the goal of 'water for all' has led to a global shift in water policies and the emergence of new 'Demand Responsive Approaches' (DRA). In principle, the DRA aims to improve efficiency and therefore the financial and technical sustainability of delivery systems. In practice, this implies major changes in the roles and responsibilities of sector stakeholders. "People's participation" implying users committees, and "community ownership" implying cost sharing principles have become catch-phrases in the mainstream development literature today to justify the paradigmatic shift of the state becoming a "facilitator" that enables access to these services.

These principles as well as related principles of integrated water management, increasingly inform the development and implementation of water supply policies around the world, but their interpretation and the degree of their translation into practice varies substantially, both between and within countries. At the same time, there is growing consensus on the importance of poverty reduction as a central objective of both government and donor strategies. A key concern therefore is the extent to which sector reform objectives are consistent with wider objectives of poverty reduction and how linkages between the two can be enhanced.

Specifically in the case of water, these reforms "have been proposed in many countries as a way to address diminishing per capita availability, increasing problems in water quality and increasing competition for control, access and use of available freshwater. They seek to comprehensively reform governance in the water sector" [Cullet 2006]. The Census of India in 2011 emphasizes that 70% of the total population of India reside in rural areas where provision of clean drinking water faces a challenge. Along with proper supply of drinking water, sanitation and sustainable conservation of environment are also essential in improving the rural health of India and reduce incidents of death due to scarcity of water. It is worth mentioning that, sometimes the targeted growth rate cannot be achieved due to water scarcity since water is not only a consumable good, but also stands for a crucial component of irrigation and agricultural activities and an environmental amenity. Herein lies the significance of reforms in the rural water supply for drinking and sanitation. The novelty introduced by the reforms is that water rights are now created in favour of water users. These rights are the necessary premise for participation in the management of water resources, for the setting up of water user associations and for the introduction of trading in entitlements.

1.1 Water Sector Reforms in India

GoI's major intervention in the water sector started in 1972-73 through the Accelerated Rural Water Supply Programme (ARWSP) for assisting states/union territories to accelerate the coverage of drinking water supply. In 1986, the entire programme was given a mission approach with the launch of the Technology Mission on Drinking Water and Related Water Management, later renamed the Rajiv Gandhi National Drinking Water Mission (RGNDWM) in 1991-92. The Eighth Five-Year Plan in India (1992-97) introduced the concept of water as a commodity that should be supplied based on effective demand, the cost recovery principle and managed by private local organisations. Through the 1990s, the World Bank already had a series of water supply and sanitation projects in various states of the country based on these principles. Of particular relevance is the World Bank initiated drinking water and sanitation pilot project "Swajal" initiated by the government of Uttar Pradesh in 1996. The World Bank stated: "Policy reform is urgently required, in particular to: (a) replace the current supply driven approach that results in inefficient service delivery and poor quality of construction with a demand-driven approach where decision making responsibility is given to beneficiaries; (b) integrate rural water supply, environmental sanitation, environmental management, catchment protection, and health and hygiene; (c) introduce cost recovery to increase sector sustainability; and (d) develop a state water resource management policy" [World Bank 1996]. All subsequent sector reform schemes in India, for drinking water and sanitation, were structured on remarkably similar principles and components as Swajal.

A joint World Bank and GOI review of water resources management in 1999 (World Bank, 1999) subsequently concluded that India faces an increasingly urgent situation with its finite and fragile water resources while different sectoral demands grow rapidly and that a major challenge for India's water sector was to find solutions for competing inter-sectoral demands. In 1999, the Department of Drinking Water Supply (DDWS) was formed under the Ministry of Rural Development (MoRD) to give emphasis on rural water supply and sanitation.

At the union level, one of the first important noticeable signs of the new conceptual framework is found in the 1999-2000 version of the ARWSP Guidelines. They specifically highlight that one of the reasons for the existence of still uncovered villages includes the non-involvement of people in operation and maintenance. The guidelines were revised specially with a view to achieve full coverage of all rural habitations during the Ninth Plan (1997-02). Three of the guiding principles were - 'the call for an increase in people's participation', 'the need to treat water as a socio-economic good' and 'the use of 20% of available funds for states promoting reforms along these lines'. The revised guidelines made it clear that it was necessary to move away from the perception of water as a "social right" and rather manage water as "socio-economic good" to ensure its "effective use".

Reforms in the rural drinking water supply sector were adopted in 1999 in the country and

Pilot Projects in 67 districts across 26 states were taken up. The GoI decided to move to a demand-based approach where users get the service they want and are willing to pay for. Apart from demand-responsiveness, this approach stressed financial viability and sustainability of the schemes, through full cost recovery of operation and maintenance and replacement costs. "This probably represents the world's largest (central) government supported yet demand-based rural drinking water programme. The Water and Sanitation Programme – South Asia (WSP-SA) and UNICEF provided institutional support to the RGNDWM for the Sector Reform Pilot Projects. They also provided implementation support to selected states…" (James, 2004). Thus, the basic concepts of the reforms include community participation in the planning, implementation, operation and maintenance of the schemes of its choice. This is a paradigm shift from supply driven to a demand responsive approach, centralised to the decentralised service delivery, from the top down to the bottom up approach and ultimately to change the role of the Government from that of a service provider to a facilitator.

The new National Water Policy (NWP) (Ministry of Water Resources, GoI, 2002) is a good example of reforms undertaken in the states. While allocating topmost priority to drinking water followed by irrigation, hydropower, ecology, agro-industries and non-agricultural industries and navigation and other uses, the NWP 2002 focuses on the physical and financial sustainability of existing facilities to ensure that the water charges for various uses should be fixed to cover at least the operation and maintenance charges of providing the service initially and a part of the capital costs subsequently. After three years since the pilot projects were initiated, on 25.12.2002, the Hon'ble Prime Minister of India, Sri Atal Bihari Vajpayee, launched Swajaldhara by scaling up the said Sector Reforms initiatives throughout the country.

Water supply is to be ensured to the rural population by Piped Water Supply Schemes (PWSS) and Spot Source Water Supply Schemes (SSWSS). A PWSS is adopted to cover a larger population and also when there is the need of proper treatment of raw water. A SSWSS is adopted to cater smaller population and also where the raw water requires no or minimum treatment. Swajaldhara lies in SSWSS category. The salient features of this scheme are:

(i) This programme is dependent on community participation based on empowerment of villagers to ensure their full participation in the project through a decision making role in the choice of the drinking water scheme, planning, design, implementation, control of finances and management arrangements. (ii) The ownership of drinking water assets vests with community/ panchayat itself. (iii) The minimum share of community contribution for 40 litres per capita per day (LPCD) would be 10% of the estimated capital cost of the project and funding by the Govt. of India would be restricted to 90% of the capital cost. (iv) The community contribution towards the capital cost of the schemes could be in the form of cash/kind/labour/ land or combination of these. However, at least 50% of the community contribution will have to be in Cash. In case community contribution is more than 10% of the scheme cost, the

excess amount shall be taken into operation and maintenance fund. The hundred percent of the operation, maintenance and management (O & M) cost should be financed by the users. (v) The community contribution need to be just 5% of the estimated capital cost of the project if more than 50% of the population within that community comprises of Scheduled Caste/ Scheduled Tribe. (vi) Stronger links to watershed development programmes and control measures on over-extraction of groundwater should be adopted.

1.2 Literature Review

A lot of studies have been carried out since the launch of the Swajaldhara project in 2002. The Planning Commission of Government of India (2002) has shown the picture of rural water supply for drinking and sanitation in a WHO – UNICEF Sponsored Study. Panda, R.C. (2003), the then Joint Secretary, Ministry of Rural development, Department of Drinking Water Supply, Government of India has clearly outlined the guidelines and demonstrated the working details of the Swajaldhara project.

Krishnan, R. (2003) has critically evaluated the Swajaldhara project which entailed micro studies in 20 villages in four districts – Solan (Himachal Pradesh); Thiruvananthapuram (Kerala); Raichur (Karnataka) and Bikaner (Rajasthan). About 350 households were surveyed and discussions held with various groups such as women, farmers, village elders, social workers, government officials and health staff in primary health centres and hospitals. This study rightly pointed out the limitations of Swajaldhara as she concluded "…vindicated by the findings of the village surveys, several important issues must be addressed for ensuring that the Swajaldhara initiative improves the quality of life for those most affected by water stress – poor households, women and children. This requires either an enhancement of the scope of Swajaldhara or the simultaneous implementation of other programmes as complementary activities. Additionally, as in the past, water supply schemes would have to be implemented simultaneously with provision of sanitation facilities".

Joshi, D. (2004) has outlined case study findings in Andhra Pradesh on water security for the poor into Demand Responsive Approaches (DRA) in the context of building sustainable livelihoods. She has delivered an in-depth analysis of the Water Sector Reforms in India.

Narang, A. (2006) has discussed the issues of drinking water supply in the context of Indian rural problems. Findings from field surveys are drawn on to examine some emerging trends and concerns in securing the right to drinking water through this scheme.

Sampat, P. (2007) has presented detailed Swajaldhara case studies in Rajasthan and Gujarat. Her field study reveals how Swajaldhara ignores existing socio-political realities that prevail across India's villages, where income inequalities, caste hierarchies and local power dynamics continue to deny this vital resource to the marginalised and the poor. A basic underlying assumption of Swajaldhara is that cost-sharing will enable participation in implementation and

ownership of assets. But the study revealed that "… a chief concern emerging from this study is that through the introduction of shared cost and water tariffs only those with adequate resources are able to access water while others remain outside the scheme's purview. Thus, those that cannot afford to pay the initial cost and contribute to the cost sharing are left to fetch water from already existing sources".

Cullet, P. (2009) has made an in-depth analysis based on surveys in villages of Rajsamand and Bhilwara districts of Rajasthan, Badwani district of Madhya Pradesh and Chitrakoot district of Uttar Pradesh and pointed that "the evolution of Swajaldhara indicates that existing reform principles are likely to evolve further in years to come". The new policy principles conceive water as an economic good, contemplate imposing on each individual community an increasingly important burden of their own water supply, and generally, conceive of a reduced role for the government and a concomitant increase of the role of the private sector in delivering drinking water. He further observed that "the implementation of these new policies will lead to outcomes that are at least in some cases unacceptable from the point of view of established measures of equity and will directly or indirectly lead to violations of the human right to water. While the demand-led paradigm benefits a segment of the rural population, it affects the poorest by bypassing them, it creates increased inequalities in access to water, and in the long run, the imposition of operation and maintenance costs to each village individually will lead to reduced access to water in villages less well-endowed with water. He concluded that "On the whole, ongoing reforms need to be thought afresh because they do not primarily ensure a better realisation of the human right to water for the poorest people with least access to water, and only partially, implement the constitutional framework for decentralised democratic governance".

2. Objective and Methodology

Cullet, P (2009) has rightly pointed out that the analysis of the Swajaldhara Guidelines gives an interesting overview of important issues raised by the introduction of the reforms in the drinking water sector. Yet, an analysis of Swajaldhara on the ground is required because the successes and failures encountered in specific villages have important lessons for the development of legal and policy frameworks in years to come. Swajaldhara Scheme has been making a notable contribution towards improving rural livelihoods in India during the last two decades. But this issue has not been properly addressed in the recent past. Moreover, a very few studies on this issue have so far been carried out in West Bengal. Herein, lies the significance of the present case study where we have tried to find out the impact of Swajaldhara scheme on the livelihood of rural people of Purba Medinipur district in West Bengal.

For our study, we have selected Bajitpur Matangini Swajaldhara Scheme (BMSS), situated in the Purba Medinipur district of West Bengal. A cost – benefit analysis in the form of simple income saving due to subscribing Swajaldhara, has been carried out. The impact of clean and

pure water for drinking and sanitation upon health is explored. Also, secondary income from kitchen garden as a by-product of Swajaldhara has been taken into consideration.

Swajaldhara consists of two Dharas (streams). First Dhara (Swajaldhara I) will be for a Gram Panchayat (GP) or a group of GPs or an intermediate Panchayat (at Block level) and the Second Dhara (Swajaldhara II) will have a District as the Project area. BMSS falls under Swajaldhara – I. BMSS is the first Swajaldhara project in the Purba Medinipur district of West Bengal. This Swajaldhara - I project was completed and commissioned in 2003. We have selected BMSS scheme purposively. A complete enumeration of households and business units in the locality was made and the pattern of water use for drinking and sanitation was noted. From the total population, we have selected 100 households and business units in the locality randomly. The sample consists of two distinctive groups. Group – I consists of 90 households and business units who are members of the beneficiary group using the water supplied from the Swajaldhara Scheme for drinking, sanitation and kitchen garden farming. Group – II includes 10 non-members who use water carried from tube well and ponds for drinking and sanitation. The sample households and business units were administered with well-designed, semi-structured questionnaires to get required information. The first set of data was collected in the year 2011-2012 to take up the analysis. To impart further clarity, the second and final set of data was collected in 2012-13.

2.1 Study Area

BMSS is located in the central position of Bajitpur village in the vicinity of Vivekananda Mission Ashram. It is situated on the right side of the Chaitanyapur - Kukrahati Road. The presence of the Mission Ashram and its establishments, a college, four schools, a hospital and a busy market has resulted in a densely populated rural area suitable for establishment and operation of a swajaldhara project. Village Bajitpur is under number 3, Chaitanyapur Gram Panchayat, Sutahata Block, Purba Medinipur district of West Bengal. The area lies in the lower gangetic plain agro-climatic zone of the state. The area lies between 22°7'N to 22°9'N latitude and 88°1'E to 88°6' E longitude. The area is covered with alluvial soil. The average temperature varies between 10°C - 35°C, while the average annual rainfall varies between 150cm – 175cm.

3. Working of the Bajitpur Matangini Swajaldhara Scheme

3.1 Principles

BMSS follows the fundamental reform principles, which need to be adhered to by the State Governments and the Implementing Agencies. The Scheme has adopted the following principles:-

(i) A demand-responsive, adaptable approach along with community participation based on empowerment of villagers to ensure their full participation in the project through a decision

making role in the choice of the drinking water scheme, planning, design, implementation, control of finances and management arrangements;

(ii) Full ownership of drinking water assets with appropriate levels of Bajitpur Gram Panchayat,

(iii) Panchayats / communities to have the powers to plan, implement, operate, maintain and manage all Water Supply and Sanitation schemes,

(iv) Partial capital cost sharing either in cash or kind including labour or both, 100% responsibility of operation and maintenance (O&M) by the users;

(v) An integrated service delivery mechanism;

(vi) Taking up of conservation measures through rain water harvesting and ground water recharge systems for sustained drinking water supply; and

(vii) Shifting the role of Government from direct service delivery to that of planning, policy formulation, monitoring and evaluation, and partial financial support.

3.2 Enabling Environment

For the proper and effective implementation of Swajaldhara Project the following enabling environment is essential: (i) Panchayati Raj Institutions (PRIs) are to be vested with functions and finances, and supported with functionaries to carry out the responsibilities of drinking water supply scheme planning, designing, implementation, operation, maintenance and management. For BMSS, Sutahata Panchayat Samity and Purba Medinipur Zilla Parishad are the nodal PRIs. (ii) Village Water and Sanitation Committee / Beneficiary Committee is a committee of Gram Panchayat. (iii) States would need to enact and implement law on effective ground water extraction control, regulation and recharge. (iv) Institutional strengthening and capacity development of the State, District, Block, Gram Panchayats and the community level institutions is necessary. (v) State Government should integrate water conservation and rain water harvesting schemes with the drinking water supply schemes. However, for BMSS, no such water harvesting scheme has been set up along with it. (vi) Rural drinking water, sanitation, health, and hygiene programmes need to be integrated at the State, District, Block and Gram Panchayat levels. This has been done successfully by the Chaitanyapur GP and the Sutahata Panchayat Samity.

3.3 Community Contribution

The minimum share of community contribution for 40 litres per capita per day (lpcd) service level is available in lieu of 10 percent of the estimated capital cost of the project and funding by Government of India (GOI) is restricted to 90% of the capital cost. In case of all habitations fully covered in the States, with 40 lpcd drinking water facility, the service level can be improved to 55 lpcd with 20 per cent of the capital cost to be borne by the community. In such States,

in case of water supply schemes providing more than 55 lpcd, the additional incremental cost would have to be borne by the community / Panchayati Raj Institutions/ State Government. Funding by Government of India would be restricted to 80 per cent of the capital cost of 55 lpcd schemes only. Presently BMSS has set up the target of 40 lpcd drinking water facility.

The community contribution towards the capital cost of schemes may be in the form of cash / kind/ labour / land or combination of these. However, at least 50% of the community contribution will have to be in cash. For BMSS, 100% of the community contribution was in form of cash. In case community contribution is more than 10% of the scheme cost, the excess amount shall be taken into operation and maintenance fund as has been done in BMSS.

3.4 Operation, Maintenance and Management (O&M)

Operation, maintenance and management cost of the BMSS is fully borne by the Beneficiary Committee /User Group. This includes recurring costs like salary of operators, electricity charges as well as cost of periodic repair and renewal.

Gram Panchayat / Beneficiary Committee mobilises funds through levy and collection of user charges for the operation and maintenance of BMSS. All the financial transactions in BMSS are made through an account in a nationalised bank. Two of the members are empowered for doing all the financial transactions on behalf of BMSS.

The District Panchayat has taken steps to provide training to persons selected by the Gram Panchayat / community to operate and maintain the drinking water schemes. Funding for the capacity development of Panchayat and Users Group functionaries is done partially from the Swajaladhara resources.

3.5 Institutional Setup

The State Government is the coordinating agency for the project. Panchayati Raj institutions are the implementing agencies. It is necessary to have a State Water and Sanitation Mission (SWSM) under the chairmanship of the Chief Secretary/ Officer of Chief Secretary rank. At the District level, the Zilla Parishad performs all the functions hitherto performed by the DWSM. At the village level Gram Panchayat is the Implementing Agency.

The Drawing and Disbursing Officer (DDO) of the District Panchayat acts as the DDO for all funds received under Swajaldhara. The District Panchayat meets as often as possible but not less than four times a year. The Village Water and Sanitation Committee (VWSC) under the Chaitanyapur Gram Panchayat has implemented the BMSS with active participation of the villagers. For BMSS, the VWSC is responsible for

(i) ensuring GPs to take up Swajaldhara implementation in each Gram Sabha meeting;

(ii) ensuring community participation and decision making in all phases of scheme activities;

(iii) organising community contributions towards capital costs, both in cash and kind (land, labour or materials);

(iv) opening and managing bank account for depositing community cash contributions, O&M funds and management of project funds;

(vii) procuring construction materials/goods and selection of contractors (where necessary) and supervision of construction activities;

(viii) commissioning and takeover of completed water supply and sanitation works through a joint inspection with DWSC;

(ix) collection of funds through a tariff, charges and deposit system for O&M of water supply and sanitation works for proper managing and financing of O&M of the services on a sustainable basis; and empowering of women for day to day operation and repairs of the scheme; and

(x) creating and promoting integration of drinking water, sanitation and hygiene in the Panchayat.

3.6 Participation of Women

Since collection of drinking water in villages is primarily done by women, they need to be actively involved in planning, choice of technologies, location of systems, implementation, operation and maintenance of water supply schemes as has been done under BMSS. So, at least one third members of the VWSC are women and they get preference in training for repair of handpumps, etc. Women members of BMSS are encouraged to participate in every decision making aspect.

3.7 Technology Options

The technology option for any village should be acceptable, adaptable and affordable for the community as in the case of BMSS. The selection of water supply technology for a given locality is determined by a number of factors, such as technical feasibility, users preferences and requirements combined with willingness to contribute towards capital cost and O&M. Site specific conditions such as availability and reliability of electricity supply, quality of ground water etc. must also be factored in by the community while making choice of technology. The service level is as per the users' preference. However, care is taken that there is greater community participation. The BMSS Project is ideally suited for small village based self-sufficient schemes.

3.8 Quality Control

For BMSS, the quality of construction is supervised at all times by the Line Department providing technical support to the Gram Panchayat / User Groups. The responsibility for ensuring the quality of works rests on the Line Department / Agency at the District level.

The DWSC makes an arrangement under which a team of experts visit once in a quarter,

inspect the works quality and give their report to the District Panchayat / DWSC. In case defects are pointed out in the report, the same are rectified before further payments are made. In addition, the State Water and Sanitation Mission (SWSM) also puts in place a system of random inspection of projects taken up under Swajaldhara in the State by a team of experts.

3.9 Sustainability of Sources

The community is encouraged to identify and take up water harvesting / recharge activities to benefit the relevant drinking water sources. Such activities are essential component of project funding. The Government of West Bengal has come up with a detailed State Water Policy and Vision Statement in the name of "Jal Dharo, Jal Bharo" (Fill Water, Preserve Water) which lays down the policy parameters in respect of exploitation of ground water sources and protection of drinking water sources. District Panchayats, Intermediate Panchayats and Gram Panchayats are also encouraged to take suitable local initiatives for ensuring sustainability of safe water sources.

3.10 Funding of Swajaldhara Projects

Up to 20 percent of the Budget provision for Rural Water Supply Programme of Government of India has been earmarked for Swajaldhara Projects. For the implementation of schemes approved under Swajaldhara-I, the funds are released in two equal instalments. The first instalment (50% of the sanctioned scheme capital outlay) is released to the Gram Panchayat. Release of the second instalment by Government of India depends upon the SWSM and the State Government satisfying and recommending release of the funds with proper Utilization Certificate and Audit Certificate. The State Government and SWSM consider the following before sending their recommendation to Government of India: (i) Utilization of the total available funds; (ii) Utilization certificates duly signed by Chairman and Secretary of DWSC, duly verified and countersigned by the CEO of the SWSM; (iii) Audit Report of the Chartered Accountant covering all the points indicated in the Guidelines and the Audit certificate and statements; and (iv) The latest Inspection Report of the schemes implemented in the respective districts by an agency (engaged by DWSC and approved by SWSM) independent of field engineers. Audit Certificate and Utilisation Certificates and other records received from DWSC and Gram Panchayats / VWSCs are retained at the SWSM / State Government level.

3.11 Inadmissible Items of Expenditure

BMSS has prohibited all kinds of expenditures which are inadmissible under Swajaldhara. These are: i) Purchase of vehicles, ii) Purchase of Land and Buildings, iii) Construction of Official Buildings and rest houses (This excludes buildings needed for drinking water schemes), iv) Expenses for any political party and religious organizations and v) Expenses for gifts and donations.

3.12 Project Accounts and Audit

The BMSS project accounts are properly maintained by the Project Authorities at the District, Block / Gram Panchayat and Beneficiary Committee levels. These accounts are audited by Chartered Accountants engaged by SWSM/ State Government. The audited project accounts are submitted to District Panchayat / DWSM; SWSM / State Government and Department of Drinking Water Supply, Government of India. The project authorities submit the audited accounts along with Project Progress Report while filing instalment claims.

3.13 Monitoring, Review and Mid Project Revision

Government of India fields multi disciplinary Review Mission comprising officers of Government of India and the respective State / UT Government, Subject Matter Specialists / Experts once in 6 months or as often as may be necessary to review the implementation and recommends remedial action. The Mission is to guide the Project Authorities for process implementation. It is not for preparing / recommending reports for release of funds. Mid Project Review Mission looks into physical and financial progress of the project and indicates specifically mid course improvement, if any, to be carried out.

3.14 Completion of Swajaldhara Projects

The BMSS Project is considered as completed on fulfilment of the following conditions:

(i) All the schemes taken up under the project have been fully completed and taken over by the Panchayat / VWSC for operation and maintenance;

(ii) The audited project accounts for the entire expenditure has been received and taken on record in the Government of India, and

(iii) The balance of Central Government of India funds in the project have been fully refunded to Government of India.

A report on completion of the BMSS Project under Swajaldhara has been placed before National Swajaldhara Monitoring Committee for observation and comments, which has been duly communicated to the State Government for further action, if any.

3.15 Post- Project Activities

Since Swajaldhara is a process project designed to enable the community to have access to acceptable, adaptable, sustainable and affordable safe drinking water system, the reform process does not end with the physical completion of water supply schemes. In several ways, it marks the beginning of a new and more challenging phase in the process where the local community have to shoulder the responsibility of operation and maintenance of the system. This entails putting into operation the decisions taken by the community with regard to tariff structure, collection of monthly water charges from the users, ensuring proper maintenance of

the system so as to ensure reliable and regular supply of safe drinking water. Towards this end, the community has to arrange for periodic quality checks of water being supplied as well as ensure sustainability of sources. This includes taking decisions regulating exploitation of ground water sources and preventing contamination of water sources. All these activities, no doubt, require high degree of community mobilisation and awareness.

4. Model Specification

The membership in the BMSS is a very cheap affair. So we found no evidence for influence of income on having Swajaldhara membership or not. On the other hand, expenditure on health, mainly on enteric, giardia, typhoid, diarrhea, stomach or abdominal cramps, upset stomach, skin diseases and other water-borne diseases is directly related to the availability of clean and pure water for drinking and sanitation. To determine the causal relationship among these variables we use the following log-lin regression equation:

$$\ln(HE) = \beta_1 + \beta_2 \ln Y + \beta_3 (SW) + u \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where HE is average health expenditure (in Rs.) per month of a household, Y is average monthly income (in Rs.) of the household and (SW) is the dummy for swajaldhara membership, (SW) = 1 if membership is taken and (SW) = 0 otherwise. u is the random error term normally distributed with zero mean and finite variance and satisfying the assumptions of the Classical Linear Regression Model. β_1 is the intercept coefficient. β_2 and β_3 are the partial slope coefficients.

Using surplus water for kitchen garden is an additional benefit derived from Swajaldhara. Although it is neither the primary nor the secondary objective, the agricultural productivity and secondary income from kitchen garden are greatly influenced by the availability of almost free surplus water from swajaldhara. To determine this relationship, we use another log-lin regression equation:

$$\ln(IKG) = \alpha_1 + \alpha_2 \ln S + \alpha_3 \ln L + \alpha_4 (SWJ) + v \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

where IKG is average income (in Rs.) from kitchen garden per month of a household, S is size of kitchen garden (in cottah), L is average labour-time devoted (in hour) per month by the household, (SWJ) is the dummy for swajaldhara membership, (SWJ) = 1 if membership is taken and (SWJ) = 0 otherwise. v is the random error term normally distributed with zero mean and finite variance and satisfying the assumptions of the Classical Linear Regression Model. α_1 is the intercept coefficient. α_2, α_3 and α_4 are the partial slope coefficients.

5. Result and Discussion

The BMSS project was completed at a cost of 6.5 lakh in 2003. The motor and the main pump is placed at the central place of Bajitpur village within the premise of one beneficiary. From there, pipeline extensions are made to the houses of the beneficiaries. Ground water is

pumped and mixed with chlorine for use for drinking and sanitation purpose. Water is supplied twice everyday – from 5-30 A.M. to 9-00 A.M. in the morning and again from 10-00 A.M. to 1-30 P.M. in the noon. At present, the total number of water supply point stands at 210. The joining fee in BMSS is two thousand five hundred rupees. The monthly user charge per water point is one hundred rupees.

BMSS provides door-to-door supply of water for drinking and sanitation not yet provided by any other mean by local government. The incidence of water-borne epidemics has been found less for BMSS members compared to the non-members. Hence, the average health expenditure especially on epidemics and skin related problems is significantly lower for BMSS members.

The water supplied from Swajaldhara is stored in tank / reservoir by the user. The water is then pumped from that reservoir for different domestic uses like drinking, cleaning and sanitation. The surplus water, if any, is used for farming in kitchen garden which is a significant source of secondary income. As the major objective of the project is providing clean and pure water for drinking and sanitation, the use of water for kitchen farming seems unethical wastage of water. But in reality, it leads to huge benefit of the users. The surplus water provided from reservoir for kitchen farming results in various vegetable cultivation in small size. However, in real terms, this results in handsome indirect income from kitchen farming over and above the primary income from service, business or agriculture.

5.1 Cost – Benefit Analysis

The operation and maintenance cost of BMSS is shown in Table 1:

Table 1: Operation and Maintenance Cost of BMSS

Item	Rs. / Month
Salary of the Motorman	4000.00
Average Electricity Bill	6000.00
Average Routine Maintenance	2000.00
Miscellaneous	1000.00
Total	13,000.00

Source: Field Survey

Table 2: The Revenue Generated

Number of Water Point	Subscription/Point/ Month (Rs.)	Total Revenue Generated/Month (Rs.)
210	100.00	21,000.00

Source: Field Survey

From Table 1 and 2, we find that BMSS is accumulating a surplus of Rs. (21,000-13,000) = Rs. 8000.00 per month. This surplus is maintained for the project upgradation, expansion and unforeseen bulk expenditure on repair and maintenance.

BMSS provides at least 40 lpcd clean and pure water from every point to users. So a typical household comprising four members gets at least 160 litre water per day. Thus the household can avail 4800 litre water for a month at a cost of only one hundred rupees. However, a water-carrier pumps and provides 20 litre water for drinking and sanitation from tube well at a cost of ten rupees. Therefore, if that household decides to buy water from carrier, he would have to pay rupees two thousand four hundred for 4800 litre water per month. That means, if the household avails water from BMSS, he simply saves rupees two thousand three hundred per month. This shows the magnitude of potential income saving per month for the typical household on account of water for drinking and sanitation.

The sample members may be classified into three occupational groups - service, business and agriculture. The occupational structure is shown in Table 3.

Table 3: Occupational Structure of the Sample Households

OCCUPATION	BMSS MEMBERS Gr - I	BMSS NON-MEMBERS Gr – II
Service	72	04
Business	12	04
Agriculture	06	02
Total	90	10

Source: Field Survey

Impact on household income and assets is depicted in Table 4 and 5.

Table 4: Average Household Income from Primary Source

	Primary Income / Household / Month (Rs)	Difference in %
BMSS Members	24,200.00	12.56
BMSS Non-members	21,500.00	

Source: Field Survey

5.2 Determinants of Health-Expenditure Disparity

In the study area, we found significant differences in the health expenditures of Swajaldhara members and non-members. This difference can be attributed to income and water characteristic

Table 5: Valuable Assets of the Households

Asset	BMSS Members	BMSS Non-members
House with concrete roof	88	08
Motor cycle	35	04
Car	04	00
TV	90	10
Refrigerator	90	08
Fixed Deposit in banks	75	07

Source: Field Survey

variables. We have tried to analyse the contribution of income (Y) and Swajaldhara Scheme (SW) to health expenditure (HE) disparity between sample households. In our log-lin model, natural log of (HE) is regressed upon natural log of Y and (SW) dummy. The estimated regression results are shown in Table 6.

Table 6: Regression Results of Health Expenditure Disparity

	Coefficient	Standard Error	t-statistic	p-value
Intercept	-6.058	3.351	-1.808	0.121
ln (Y)	1.503	0.358	4.194	0.006
SW	-1.072	0.266	-4.036	0.007

$n = 100, k = 3$

$F_{(3, 97)} = 15.198$, p-value = 0.004

$R^2 = 0.835$, Adj $R^2 = 0.831$

n (= 100) is the sample size and k (=3) is the number of parameters to be estimated. The high t values for ln(Y) and (SW) are indicative of the fact that the corresponding estimated coefficients are statistically significant. The intercept coefficient β_1 takes the value of -6.058. But it is insignificant at 5% or 10% level. The coefficient β_2 (=1.503) is the elasticity of health expenditure with respect to income. The positive sign of β_2 is in conformity with the expected positive relationship between income and health expenditure. If income increases by 1 per cent, average health expenditure increases by 150 per cent. Also β_2 is significant at any level. The Swajaldhara dummy coefficient β_3 takes the value of -1.072 and is significant at any level. The negative sign of β_3 is in conformity with the expected negative relationship between swajaldhara membership and health expenditure. $\beta_3 = -1.072$ signifies that the average health expenditure increases by 66 per cent (approx.) for the households who are non-members of BMSS. F = 15.198 implies that all the coefficients are statistically different from zero and are significant at any level, d.f. = (3, 97). $R^2 = 0.835$ signifies that approximately 84 per cent of

the variation in the dependent variable ln(HE) is explained by the regression model, R being the coefficient of multiple correlation. R^2 becomes 0.831 when adjusted for the degrees of freedom.

5.3 Determinants of the Secondary Income Disparity

In our study area, we also found significant differences in secondary income in the form of income from kitchen garden between BMSS members and non-members. This difference can be attributed to land size, labour-hour devoted and availability of surplus water for irrigation from BMSS. We have tried to analyse the contribution of land size (S), labour-hour (L) and Swajaldhara Scheme (SWJ) to secondary income from kitchen garden (IKG) disparity between sample households. In our log-lin model, natural log of (IKG) is regressed upon natural log of S, natural log of L and (SWJ) dummy. The estimated regression results are shown in Table 7.

Table 7: Regression Results of Secondary Income Disparity:

	Coefficient	Standard Error	t-statistic	p-value
Intercept	5.069	0.213	23.845	0.000
ln S	0.840	0.212	3.953	0.001
ln L	0.006	0.003	2.327	0.031
SWJ	0.581	0.154	3.771	0.001

n = 100, k = 4

$F_{(4, 96)} = 40.977$, p-value = 0.000

$R^2 = 0.860$, Adj $R^2 = 0.855$

n (= 100) is the sample size and k (=4) is the number of parameters to be estimated. The high t values for all the variables are indicative of the fact that the corresponding estimated coefficients are statistically significant. The intercept coefficient α_1 takes the value of 5.069. It is insignificant at any level. The coefficient α_2 (=0.840) is the elasticity of secondary income with respect to size of kitchen garden. The positive sign of α_2 is in conformity with the expected positive relationship between income and land size. If land size increases by 1 per cent, average secondary income increases by 84 per cent. Also α_2 is significant at any level. The coefficient α_3 (=0.006) is the elasticity of secondary income with respect to labour-hour devoted. The positive sign of α_3 is in conformity with the expected positive relationship between secondary income and labour-hour. If labour-hour devoted increases by 1 per cent, average secondary income increases by 0.6 per cent. Also α_3 is significant at 5% level. The Swajaldhara dummy coefficient α_4 takes the value of 0.581 and is significant at any level. The positive sign of α_4 is in conformity with the expected positive relationship between swajaldhara membership and secondary income from agriculture in kitchen garden. $\alpha_4 = 0.581$ signifies that the average

income increases by 79 per cent (approx.) for the households who are members of BMSS. F = 40.977 implies that all the coefficients are statistically different from zero and are significant at any level, d.f. = (4, 96). $R^2 = 0.860$ signifies that approximately 86 per cent of the variation in the dependent variable ln(IKG) is explained by the regression model, R being the coefficient of multiple correlation. R^2 becomes 0.855 when adjusted for the degrees of freedom.

6. Conclusion

The Government of India is committed to reform, but important concerns remain relating to the pace and sequencing of these reforms at different levels. The fragmentation of sub-sectors is already a major problem and the challenge of effecting institutional change cannot be underestimated. In the context of this research, the contribution of poverty reduction strategies to meeting sustainability objectives of the sector remain inadequately understood and poorly articulated in policy documents. The research suggests that political imperatives have tended to override other concerns.

Having made the policy shift, in India the emphasis is on a speedy transition from a supply to a demand-led approach. However, experience in pilot districts has been variable. Many sectoral stakeholders argue that attempts to scale-up may be premature while others point out that the policy framework needs to be sufficiently broad to allow individual states to adapt it to local context. The research shows that the haste in implementation and institutionalisation is of concern, especially as the Swajaldhara guidelines do not have an explicit poverty and equity focus. Highlighting poverty issues in policy is imperative if poverty reduction is to be planned and designed in practice. However, 'policy from above' evaporates as it is handed down across institutions, from global to local. Because of the lack of focus, instead of narrowing down, the links between poverty and water perpetuates.

We have also noticed the introduction of E-Governance and Public Private Partnership (PPP) model in various sectors. In order to ensure effective distribution of public services, good governance should be the key, which in turn would make policy-makers, policy-executors and service providers more accountable to the water users. Good governance in the sector of water supply and sanitation can delineate the spheres of responsibilities of them to the public. The public accountability should also be ensured among the public institutions. The transparency is a step towards right to information of the public which would generate the sense of ownership in the community.

For BMSS, households having own tube well are reluctant to join the Scheme thereby limiting the scope for further expansion. During dry spells of summer, the ground water table falls resulting in the fall in water pressure. Water distribution, then, becomes irregular and quantity of distributed water falls. Also in the evening, a problem of low voltage in the electric power supply occurs very often. Then water distribution to remote water points becomes problematic.

There is also some discomfort so far as the daily duration of water supply is concerned. At present, the total duration in two spells is seven hours. But there is demand for one more our in the morning spell to be started from 5.00 A.M. upto 9.30 A.M..

However, the experience of BMSS supports Swajaldhara as an efficient institution for rural water supply for drinking and sanitation. Taking the membership can lead to substantial economic benefit in the form of income saving. In BMSS, a typical household comprising four members can save rupees two thousand three hundred per month compared to a non-member.

The provision of drinking water (of acceptable quality) along with improved sanitation would bring about benefits for the people in terms of reduction in incidence of water-borne diseases, particularly diarrhoea, only if measures are also undertaken to tackle the various transmission pathways for diarrhoea. These include consumption of water that are not stored properly, lack of hand-washing and inappropriate childcare. The healthcare facilities are also important as they would help reduce the incidence and hence the spread of health concerns. It has been seen that children, particularly girls are often asked to carry heavy loads of water and improved water supply may relieve these young girls. However, to ensure sustained benefits, these girls would have to be groomed into well-educated and aware mothers, for which there is a need to set up improved schools, especially for girls. The operation of Swajaldhara can mitigate the incidence of water-borne diseases and hence helps to cut down health expenditure significantly. This study reveals that the average health expenditure decreases by 66 per cent (approx.) for the BMSS members compared to the non-members.

The study finds no evidence of income influencing BMSS membership or not. However, BMSS does influence secondary income of the BMSS members by providing surplus water for kitchen farming. This paper suggests that that the average secondary income increases by 79 per cent (approx.) for the households who are members of BMSS compared to the non-members. The discussions with villagers indicate that when there is an improvement in the access to water there is sometimes a decline in the perceived value of water, leading to wastage and inefficient use. Therefore, awareness creation about the value of the resource and the need for conservation should lie at the core of water initiatives like Swajaldhara. It needs to be borne in mind that the supply of water is by and large limited by natural availability; technologies for harnessing, recycling and reusing can enhance supplies, but only to a limited extent. Therefore, the crux of water management lies in managing demand. Unless the central and state governments in collaboration with the village/block panchayats and NGOs integrate Swajaldhara as a part of the rural development planning process and customise the initiative to local needs and priorities, the programme may not deliver.

All these evidence justify the enormous potential of Swajaldhara and highlight the need for further support to such projects to make the sector reform initiatives successful. But the most significant question of equity remains unanswered as exclusion of the marginals is done at the

outset. The poor people who cannot afford the entry fee and monthly subscription fee are left out from the Swajaldhara network. This remains a key issue which must be addressed by the researchers and the policy makers in future.

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