Sujalam Suphalam (SS) : A multi-stakeholder Water Resources Management Approach

Sarang Kulkarni, Pragya Soni

https://doi.org/10.47884/jweam.v2i2pp01-09

Journal of Water Engg. and Management

ISSN 2582 6298
Volume-02
Number- 02

Jr. of Water Engg. and Mgt.
2021, 2(2) : 01-09

Journal of Water Engg. and Management, 2021,2(2) : 01-09
https://doi.org/10.47884/jweam.v2i2pp01-09

Our published research paper is protected by copyright held exclusively by Journal of Water Engineering and Management. This soft copy of the manuscript is for personal use only and shall not be self archived in electronic repositories. If you wish to self-archieve your article, please use the accepted manuscript version for posting on your own institution website. You will acknowledge the original source of publication by the following text : "The final publication is available at www.jweam.in or can be obtained by writing mail at ce@jweam.in".

Journal of Water Engg. and Management, 2021, 2(2) : 01-09
https://doi.org/10.47884/jweam.v2i2pp01-09

Research Paper

Sujalam Suphalam (SS) : A multi-stakeholder Water Resources Management Approach

Sarang Kulkarni[1], Pragya Soni[2]

[1]Subject Matter Expert, Bharatiya Jain Sanghatana, Fergusson college of Pune, Maharashtra, India.
e-mail : skulkarni@bjsindia.org

[2] Senior Manager, Documentation Bharatiya Jain Sanghatana, The International Institute for Population Sciences (IIPS), Mumbai, Maharashtra, India.

ABSTRACT

Rejuvenation of existing water bodies is an important element to achieve village water security in the context of both drinking and agriculture water requirements. Rejuvenation of the water structure leads to the creation of storage or increase in the storage capacity of the existing structure, eventually aiding to groundwater recharge. “Sujalam Suphalam” is a District level time-bound program that focuses on the improvement of village water resources by undertaking the restoration of existing water bodies, and watershed treatments for the augmentation of groundwater. It is an effort to make a parched village 'water abundant' by creating water infrastructure that instils the notion of ownership amongst the stakeholders which is an important element in arriving at a sustainable solution for drought frequented regions in a short period of time. Sujalam Suphalam (SS) takes a multi-stakeholder approach to arrive at village water security. The multi-stakeholder design of the programme involves the Government (State and District Administration) – Bharatiya Jain Sanghatana (BJS) - Community/Farmers Group – like-minded civil society organisations and advocacy groups (public representatives and newspaper & electronic media) as the stakeholders. Where Government authority provides necessary sanctions and takes full ownership of the programme, BJS provide their services of heavy machinery and support the Government in programme execution, implementation, community mobilisation, data management and monitoring. This program promises rejuvenating water structures that store run-off generated during monsoons, which recharges groundwater, these earthen works also provide an essential resource to the farmers which is silt to enhance individual farmer's productivity. SS has helped in increasing the agricultural income by bringing the larger area under irrigation and enhanced the income from agro-allied diversified activities. By desilting percolation tanks, water harvesting tanks and village nalas (rivulets) BJS has not only enhanced the storage capacity of these structures but also increased the period of water availability in the parched villages. It increased the number of days of drinking and domestic water availability accessible to all habitations within a village. The approach promises to reduce the gap between demand and supply of both, water and silt, in a short period. It also garners active participation from the farmers that leads to effective management of community water resources by enhancing the capacity of Panchayati Raj Institutions and individual farmers.

Since the implementation of IWRM projects back in the 1970s, many water storage structures were created in drought-prone villages. But often it was found that very few programs were concentrated on rejuvenation or repair of these water bodies. Often the Gram Panchayat was given charge of these water bodies who lacked the

necessary guidance and resources to rejuvenate or repair. Sujalam Suphalam program is focused on rejuvenation or repair of government and community-owned water bodies. These processes demanded the active participation of district administration, gram panchayat, progressive farmers, farmer boards at village level and those who were on the periphery of these institutions.

This paper reviews the multi-stakeholder sustainable water conservation approach adopted by Bharatiya Jain Sanghatana with the support of the government of Maharashtra and Karnataka. The paper also highlights the main components of the programme, methodology of the programme, execution, key achievements, impacts and critical lessons learnt.

INTRODUCTION

About 80 per cent of the gross cropped area in Maharashtra falls in rain-fed zones and 50 percent of the area is covered under the Drought Prone Areas Project (DPAP). The uncertain, insufficient and irregular rainfall patterns have adversely affected agriculture in the state, also frequently resulting in shortages of water for drinking and irrigation. The Government of Maharashtra has accorded water security the highest priority in its bid to improve rural incomes and livelihood security. The practice of tank irrigation, especially to irrigate small pieces of land that are less than 250 hectares (ha), is common and supplements water sources for drinking and animal husbandry. These tanks and small dams, along with the more recent extension of micro-irrigation in rural areas, are reported to have contributed towards resilience to drought and climate change impacts (Sharma, 2012). Water is critical in enhancing agricultural production in arid and semi-arid regions of India. Some states, especially Maharashtra and parts of Karnataka have been facing drought consistently over a period of time. The droughts have been observed to be consistent in some districts of these states. Drought years and rainfall vagaries during good rainfall years have greater impacts on the livelihoods of local communities. A greater rate of migration is the response of local communities to the loss of agricultural production in order to find better opportunities for livelihood in urban areas. The history of watershed management in India is well documented (Samra, 1997). According to Joshi et al. (2004), watershed development is an evolving process, where the stakeholder is it government, NGOs and research institutes along with the village community participate in achieving objectives of watershed development programs. They further say that the success of watersheds depends on an integrated approach where technologies, market integrations and people's participation are perfectly blended. It has been observed that the major hindrance faced by the NGOs in the implementation of watershed projects is liaisoning with various government departments, majorly because of their functioning in silos. Hence, the convergence of government programs and/or various government departments with the water conservation projects conceptualised by NGOs often sees a dead-end. However, there are some organisations which have cracked the code of effective liaisoning to achieve maximum success in the implementation of water conservation programmes. Through the Sujalam Suphalam Programme, Bharatiya Jain Sanghatana (BJS) has shown a pathway in effective coordination with various government departments at various scales in implementing water conservation measures at a massive scale within a stipulated time.

Sujalam Suphalam – Evolution of the concept of the programme and its objectives

Conceptualised in 2018, Sujalam Suphalam (SS) programme takes a top-down to make drought-prone village water sufficient. In the top-down approach, SS co-ordinates with various state departments and implements the state-sponsored programs on the ground, although in the SS programme BJS works directly with the gram panchayat (under the gram panchayat model (scale down project of SS programme)) keeping the needs and demands of individual households to attain water security. Since drought wreaks havoc on the livelihood of local community members, be it large landowners or landless farmers, it becomes absolutely important that measures are undertaken quickly to enable the resilience of the local community and the effects of droughts are minimised. Since the watershed development program is an evolving process, Sujalam Suphalam has also evolved over a period of time. Initially, BJS has embarked upon the ambitious disaster response initiative programme in 2013. During the disaster period, BJS provided fodder camps and drinking water in the drought-hit villages. This ignited district level movement in Beed, another drought-hit district, back in 2013. Within a month BJS restored 117 water storage structures and increased the water holding capacity by 200 crore litres within a year. The journey that began in 2013, initially known as Maharashtra Dushkal Mukt Abhiyan, covered over 29 talukas from 3 districts until 2016. This movement was channelised in collaboration with district authorities, individual farmers. While working on the drought mitigation programs, BJS recognised that the mismanaged surface water structures and little or no management of other natural resources led to silt accumulation in the water storage structures. This was the key to both, to increase the water-holding capacity of the structure as well as aiding to percolation in subsurface groundwater reservoirs.

The major objective of MDFM is to implement a replicable, community-based water conservation and management plan at the village level in all drought-prone districts of Maharashtra. To attain this aim, Bharatiya Jain Sanghatana (BJS) implemented the drought-proofing programmes of the Government of Maharashtra and other initiatives of like-minded organisations. BJS has partnered with local communities to ensure that the work initiated by them under the above programme reaches its fruition. Given its experience of working in drought mitigation since 2013, the BJS MDFM expanded its scope and area of intervention. In close collaboration with various government departments under the overall coordination of the District Collector, BJS decided to work in the drought declared talukas in 2018, under the umbrella of ***Sujalam Suphalam***. Sujalam Suphalam has evolved into a district-level time-bound transformation programme that focuses on village water resources by restoring existing water impounding structures and through watershed treatments where ever necessary. It is the collaborative effort of BJS, Government agencies, corporates and volunteers and most importantly the villagers/ beneficiaries. The objective of this program is to undertake various water treatments to improve surface and groundwater resources, promote and strengthen community-based organisations, PRIs for water stewardship and improve health and hygiene at the household scale. The program also aims at increasing awareness amongst the community through participatory water budgeting exercises for better water management at the village scale. One of the major interventions in SS was to restore existing water infrastructure. This was prompted by the lack of regular maintenance of existing water infrastructure and minor irrigation structures that had led to reduced storage capacities and percolation, thereby affecting water availability. A similar situation has been observed with nala beds and check dams across them. The desilting of water conservation structures has been identified as

a method for addressing water storage and availability, while the application of tank silt on farmland has an impact on yields. In light of this, the Maharashtra government initiated the 'Galyukt Shivar' and 'Galmukt Dharan' programmes in May 2017, which have reportedly gathered momentum across the state. Within a short period, i.e., from 2018 until 2020 SS was able to reach 1424 direct villages in 70 talukas from 12 districts.

Sujalam Suphalam – Methodology

The Sujalam Suphalam program adopts the following two approaches for implementation based on the local context and requirements:

1. **District-wide Approach**: This is a time-bound program to increase the water storage capacity of all government water structures viz. dams, minor irrigation tanks, percolation ponds, CNBs, MNBs, Nalas etc. in the entire district. These water structures are created by the government after undertaking necessary technical and scientific surveys and considering their capacity and aquifer mapping. However, the accumulation of silt for the past several decades has resulted in their decreased storage capacity, disrupting the initial planning with which these structures were created. BJS works with the administration to bring back these water structures to their original storage capacity, thus helping to restore their scientifically assessed usefulness. District administration takes ownership of this program and provides single-window approvals and fast-track clearances for its implementation. The program involves earthwork using heavy machines provided by BJS with support from corporates, and fuel provided by the state government. Local farmers carry the excavated silt to their farmlands at their own cost, which enhances their farm productivity and constitutes a major component of the program cost. By following these procedures, all identified water bodies within the district are rejuvenated comprehensively, thereby improving water storage capacity at a large scale.

2. **Gram Panchayat Approach**: This is a demand-driven, village-level implementation approach focusing on improving village water resources by creating new water harvesting and groundwater recharge structures, undertaking the restoration of existing water bodies, and by watershed treatments for augmenting groundwater through Panchayati Raj Institutions. This approach was created to address the ever-increasing demand for water conservation work from local communities to make their villages water-sufficient. In the case of the village level approach, diesel for earthmoving machines is provided by the Panchayat while BJS supports the Gram Panchayat in program implementation by deploying earth moving machines free of cost. Here again, the local farmers take the excavated silt to their farmlands at their own cost.

The entire process-flow for implementation of the Sujalam Suphalam program is clearly defined and well-established with no monetary transaction taking place between any stakeholders, making it a completely transparent intervention

Fig. 1. The process of Sujalam Suphalam is of participatory and is inclusive in nature, where the district authority is involved in decision making along with the community members. This process depicts the effective liaisoning methodology that has been applied in this programme.

Expanse of the programme and its results

Over the years, the Sujalam Suphalam program developed different need-based models to better respond to the local context. As it expanded to newer geographies, it encompassed an increasing number of stakeholders, right from government, corporates (through CSR), Gram Panchayats, and the farmer and village communities at the grassroots level. The program works with village communities to increase awareness of water conservation through water budgeting, resulting in improved water resource management in villages.

Since the inception of Sujalam Suphalam, BJS worked in over 26 droughts hit districts across Maharashtra and 2 districts in Karnataka covering over 124 talukas and 3075 direct beneficiary villages. The following map shows the expanse of the programme from 2013 to 2020. Since 2018, the programme reached 12 droughts hit districts and was implemented in over 1424 direct villages from 70 talukas from Maharashtra and Karnataka. Over 13433 structures were rejuvenated creating a water holding capacity of 4,42,20,046 m^3 (Table 1).

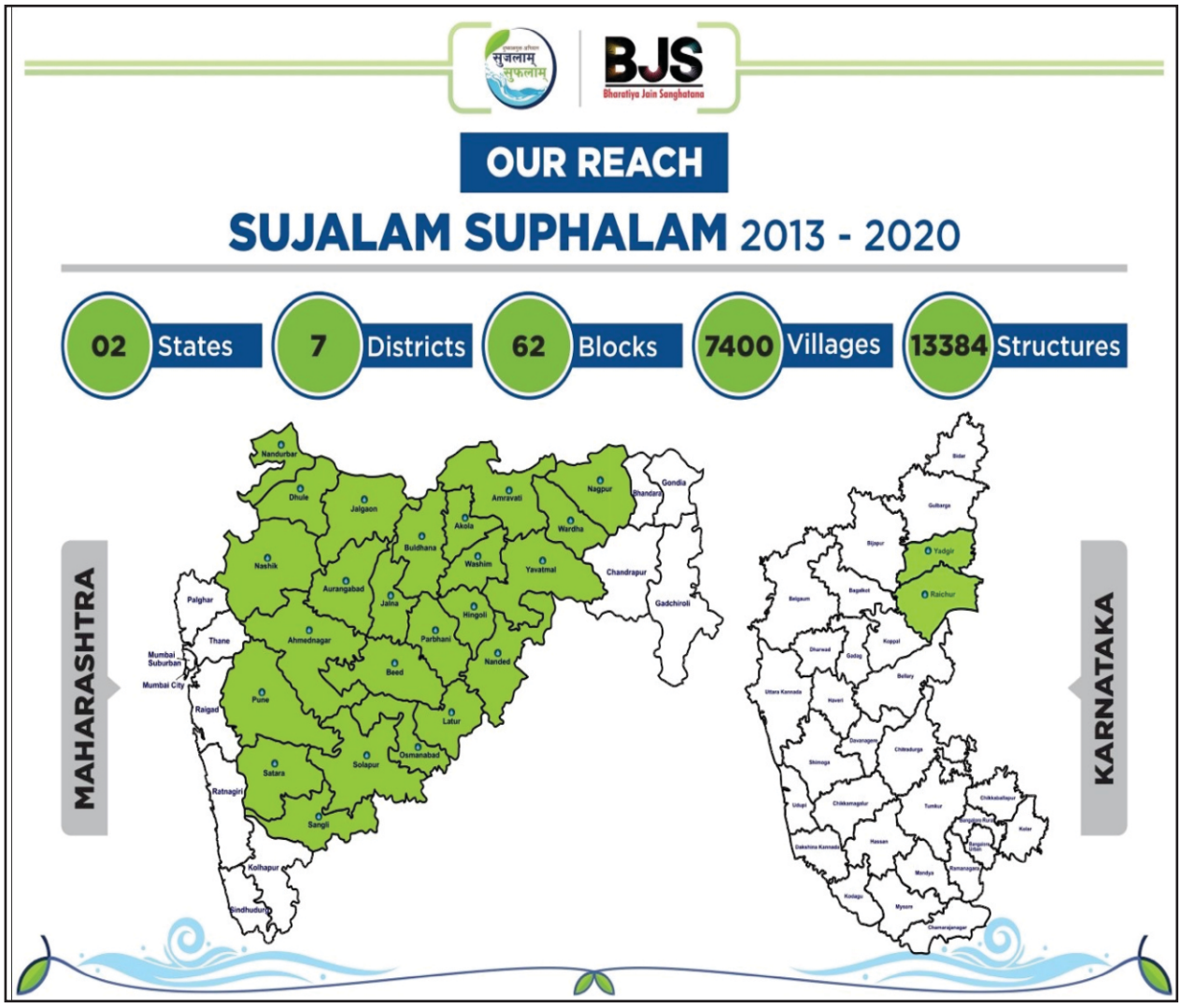

Fig. 2 Rejuvenation and water restoration summary chart

Table 1: Summary of the extent of the work (in numbers) carried out under Sujalam Suphalam since its inception in 2018.

Year	State	No. of District	No. of Taluka	Number of water bodies rejuvenated /created	Water Storage Capacity Created (cubic meter)	Silt application area (acres)
2018-2020	Maharashtra	10	60	13382	4,12,96,569	78,430
2018-2020	Karnataka	2	10	51	29,23,477	5,847
Total		12	70	13433	4,42,20,046	84,277

The impacts of the programme were measured in Buldhana, Washim and Akola districts. The impacts were majorly two-fold covering the aspect of increased surface and groundwater availability and enhancement in agricultural production. The work has contributed significantly to the beneficiary households in various ways. One of the crucial issues is how it could be sustained locally and is their sufficient mechanisms for the same with the community or local gram panchayat. As most of the benefits accrued are private it is important to mobilise those farmers and build capacities and resources for managing and maintaining the assets.

RESULTS

Focused group discussion with various stakeholders revealed that the process undertaken was transparent in nature and village communities were part of the process throughout the implementation of the program.

A household survey was conducted by water resources experts in 31 villages across the Akola district. In all the villages Sujalam Suphalam was implemented with a collaborative effort of the BJS, the government departments and the villagers. The village panchayats have informed their need to take up water conservation works in their villages to a government department, mainly the agricultural assistant who is constantly in touch with the sarpanch. The official who in turn prepared the list and forwarded it to higher authorities and the villages were selected by a collector based on this information and entrusted the work under Sujalam Suphalam. BJS provided the machines while the department contributed the fuel. Department, BJS staff and the village panchayat together planned and implemented the work. In all the villages people were very appreciative of the work taken up by BJS and felt that it could help in various ways to benefit their water situation and agriculture. However, at the time of the survey Akola District has not received any rainfall and people were of the opinion that once they get good rainfall, they would be able to say definitely about the impact. However even with very low rainfall in some villages the benefits were visible like increased well water or better crops in the areas where silt is applied. At the household level following the number of household's report benefits from different types of work (Table 2).

Table 2. Type of work and number of beneficiary households

Type of work	Number of households reporting benefits
Nala deepening, desilting and widening	289 (49.32%)
Silt application on land	85(14.50%)
Farm bunding	198(33.79%)
Talav desilting (water availability)	21(3.58%)
Farm pond (farm pond done during the year including BJS)	37(6.31%)

Various studies show that the application of sand improves retention of soil moisture and elevates the organic nutrients in the soil enhancing soil fertility (Bhanavase et al.,2011: Osman, 2008: Osman et al., 2015). Hence

many farmers showed interest in carrying the silt from the water tanks that were desilted under Sujalam Suphalam investing their resources and were benefited in terms of improved crop production. These experiences were recorded in terms of testimonials from a few beneficiaries. Silt transporters were mobilised with the assistance of BJS staff, and their consent was sought for their participation in FGDs. Only those who gave their consent were invited to participate in the discussions. The respondents were of different ages, residences and levels of experience (IIHS, 2019). 85 farmers report silt application and a combined load of more than 8000 trollies (an average of 100/farmers) being applied among the sampled households surveyed in the Akola district. There were approximately 12,724 beneficiaries who applied silt in their farmlands. During one such survey in the Buldhana district, farmers suggested that the application of silt increases the water-holding capacity of the land, reducing the need for fertilizers and increasing productivity. Further, farmers and silt transporters were of the opinion that each silt application was beneficial for 3–5 years, suggesting a long-term impact on the fertility of the soil and also indicating towards periodic desilting of the water bodies. The transportation of silt also benefits those who are dependent on such livelihood options. In one such survey in Buldhana, the silt transporters reported that they charge around ₹70–100 per kilometre to transport 3 c.um. of silt (IIHS, 2019). Silt transporters said that they earn around ₹15,000–20,000 from this operation in one season. This suggests how one activity can create several livelihood options that serve those who are either land-owners or are land-less.

CONCLUSIONS

Sujalam Suphalam programme implemented by BJS is a collaborative work with various government departments under the overall guidance of district administration. While machines with operators are provided by the BJS, the operation requirement of fuel is provided by the government department from its allocated resources. This collaboration is the highlight of the intervention and very rarely attempted. This makes it unique while being complex in programme administration and management. Another striking highlight is scale, the spread of the programme. It touches above 200 villages of the district, roughly around 20% of the villages. Being a collaborative effort and government cannot afford to concentrate on few villages, but to spread its resources across the geography and administrative units the work has touched more villages, unlike NGOs which concentrate on small pockets. The time frame under which the activities are implemented across these villages is also something to be noted. This also could be attributed to the outcome of collaboration. In a few months, the work has covered these villages.

Since the nature of the programme is that of an evolving nature, various factors need further research such as the institutional arrangement at the grass-root level that functions to sustain the implemented work. Baseline data collection at various stages of the programme will help in further validating the impacts of the programme with a strong backing of the data. When large scale programmes are implemented adopting appropriate but easy and reliable systems for monitoring is very essential. Scale sometimes compromises quality A right mix of human and technology-supported monitoring is essential. The technology could be of use here. One such example is the Mobile App created by the BJS. it could think in terms of decision support systems, GIS-based tools etc. The major factor in enabling sustainability at the local scale, capacity building efforts plays a pivotal role. Hence, in

this programme, an emphasis has been given to involving village institutions the impacts of which needs to be further documented to bring the grass-root water warriors to the forefront. Since the watershed development program is multi-disciplinary, it will be interesting to involve a mix of (geohydrology, agricultural etc.) and social science (economics, etc.) to document various aspects of this programme.

References

Bhanavase, D. B., Thorve, S. B., Upadhye, S. K., Kadam, J. R. and Osman, M. 2011.Effect of tank silt application on the productivity of Rabi sorghum and soil physico-chemical properties. Indian Journal of Dryland Agricultural Research and Development, 26(2): 82-85.

IIHS. 2019. Impact Assessment Framework for Sujalam Suphalam Buldhana Project, study report by Indian Institute for Human Settlements (IIHS), Study period Nov 2018 to Nov 2019.

Joshi, P. K., Pangare, V. Shiferaw, B., Wani, S. P., Bouma, J. and Scott, C. 2004. Watershed development in India: synthesis of past experiences and need for future research. Indian Journal of Agricultural Economics, 59(3):303-319.

Osman, M. 2008. Recycling of tank silt for improving soil and water productivity in rainfed areas. Lecture notes for the winter school on technological advances in the conservation of natural resources in rainfed agriculture. CRIDA, Hyderabad.

Osman, M., Chary, G. R., Mishra, P. K., Shankar, M. A., Padmalata, Y., Murali, R., Nimmaiah, K., Khasimpeera, K., Balamathi, A. and Haffis, S. 2015. Enhancing rainwater productivity and economic viability of rainfed crops through tank silt application. Indian J. Dryland Agric. Res. Dev, 30(2):17-23.

Samra, J.S. 1997. Status of Research on Watershed Management, Central Soil and Water Conservation Research and Training Institute, Dehradun

Sharma, G. N. 2012. MGNREGA Works field manual. MGNREGA Division, Ministry of Rural Development, Government of India.

❐❐❐