

# Gaalmukt Dharan, Gaalyukt Shivar (Desiltation of Tanks) Scheme: A Drought Proofing Intervention

**POLICY BRIEF:** February 2020

## Context:

A large number of small reservoirs (tanks) to harvest rainwater have been constructed in Maharashtra over the years, to increase water availability in semi-arid drought prone regions. With time, the reservoirs lose their water holding capacity due to accumulation of silt flowing in from their catchments. Few NGOs along with the state administration have engaged in desiltation of reservoirs, with application of silt on agriculture land by farmers. The Maharashtra Government has initiated the *Gaalmukt Dharan and Gaalyukt Shivar Yojana (GDGS)*, a supportive program to upscale this activity. However, there is insufficient scientific assessment of the various aspects of such desiltation activities.

## Key Recommendation:

Given the huge potential of the GDGS in increasing resilience to drought in the semi-arid regions, small and marginal farmers need to be given priority in the benefits. Further, accountability and transparency in the desiltation activities needs to be enhanced involving the village gram panchayat in its decision-making and monitoring.

## Introduction:

Between 2015 and 2019, there were three years declared as drought by the state government. In 2018-19, drought was declared in 151 talukas of the 26 districts. The state administration and NGOs actively engaged in desiltation of tanks as a resilience building measure. Encouraged by the positive results of such activities in a short period, the government announced the "*Gaalmukt Dharan, Gaalyukt Shivar Yojana*" (literally, silt free reservoirs and fertile farms) in 2017 and set up a "Desilting Policy Committee" which recommended desiltation of 31,459 small dams and water tanks in the state. An interdisciplinary research study was conducted to provide necessary recommendations for improving the design and implementation of the scheme.

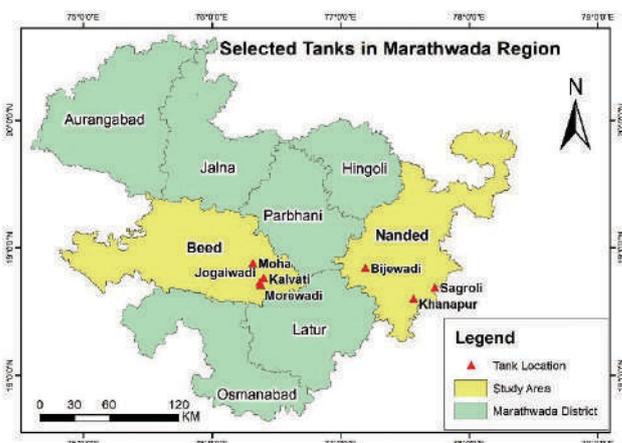
## Objectives:

- To evaluate the impacts of the desiltation activity along with the cost-benefit analysis.
- To provide evidence based recommendations for developing guidelines to upscale this work

## Methodology:

The study was conducted in 2017 in seven tanks located in Beed and Nanded districts of Marathwada region in Maharashtra. These tanks were desilted in 2016.

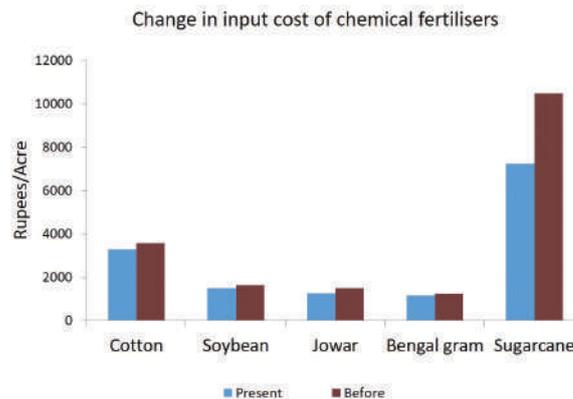
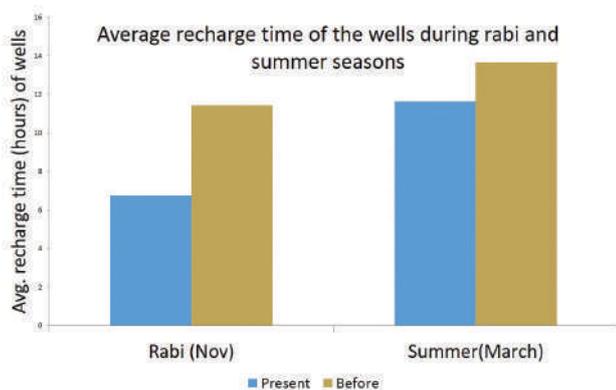
1. Structured quantitative surveys were conducted with 292 farmers in the study area. Focus Group Discussions and key informant interviews were also conducted with the communities and NGO representatives respectively.



2. Soil samples from silt applied farms, control farms and from percolation tanks were analyzed to assess improvement in soil fertility.
3. Cost benefit analysis of the desiltation activity was done using Replacement Cost method.

## Research Results:

- The average benefit-cost ratio (of three tanks) is 1.31 indicating that desiltation is economically viable.
- The area under intercropping and perennial irrigation is increased by 300% and 112% respectively. Rainfed area and waste land is reduced by 7% and 11% respectively.
- Yield of cotton, soybean and wheat increased by 63%, 56% and 40% respectively. In the Rabi season, production of bengal gram, jowar and wheat shows an increase of 47%, 41% and 215% respectively.



- On average, the gross annual income for farmers cultivating on silt applied land increased from INR 37,489 to INR 92,855.
- Farmlands with added silt has a higher water holding capacity and improved organic carbon in the soil as compared to control farmlands without the added silt.
- Farmers also report other benefits such as increase in biomass leading to more fodder availability for livestock, of greenery surrounding the tanks and in the economic value of land.
- Farmers reported that the small and marginal farmers are unable to access the silt due to lack of funds for transportation, timely availability of transportation vehicles and lack of the approach road from the tank to the farm.

### Policy Recommendations:

- Given the benefits and economic viability of desiltation and application of silt on farmlands, priority of the GDGS scheme should be given to small and marginal land holders.
- Grant support (partial/full) or interest free loans may be provided to small and marginal farmers for transportation of silt from the reservoirs.
- Selection of tanks for desiltation should be based on assessment of the groundwater recharge potential of the water storage area of the tank and quality of the silt to be applied in the farm.
- The process of desiltation should be monitored through the Village Monitoring Committee established by the Gram panchayat in collaboration with the village *Talathi*. The Gram panchayat should be given the central role in planning and execution of the desiltation work.
- The catchment of the reservoir should be fully treated with soil and water conservation measures to reduce land degradation which will thus reduce silt accumulation and prolong the interval of desiltation.

- References:**
1. Repeated Floods, Drought Affect Maharashtra, But They Are 'Not An Election Issue': Experts. Available at <https://bit.ly/2Fe8nDe>
  2. Economic Survey of Maharashtra 2018- 19 available at <https://bit.ly/2Qi9wje>
  3. Photo Credit: <https://bit.ly/2Tm9mch>

**Additional Source:** The Nature Conservancy and Watershed Organisation Trust 2018, Report on An Impact Evaluation Study and Proposed Guidelines for Water Tank De-siltation in Maharashtra, <https://bit.ly/2MFiFap>

### Acknowledgement:

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