

Understanding Farmers' Adaptation to Water Scarcity: A Case Study from the Wainganga Basin, Maharashtra, India *WACREP Activity No.3.6.1*

Wainganga is the largest sub-basin of Godavari river which occupies an area of 36,306 sq km. It is unique due to its physical and social features - a region with highest forest cover in the State of Maharashtra, however suffers from a developmental backlog, despite the availability of natural resources. The Wainganga Basin has over 24 major and medium dams and the economy of Wainganga sub-basin is mainly depending on agriculture, forests and fisheries. Over 80 per cent of the community involved in these occupations. Agriculture, forests and fisheries are an integral part of the natural agro-climatic system and extremely sensitive to climate change. The farming community critically believes that the traditional practices in agriculture and fisheries are responsive to nature and have the potential to adapt the climate change. However, the systems currently followed in the Wainganga sub-basin have considerably changed for the worse from the traditional management practices.

With the advent of Climate Change and loss of traditional agricultural and fisheries management practices, livelihoods which depend on them have been severely affected. Hence there is a need to document the existing strategies that could be 'climate-responsive' and identify new techniques or management practices which have the potential to survive in the changing climate scenario thereby increasing the resilience of the community. India Water Partnership took the initiative to document few case studies under WACREP Phase-I and "Sand bed or river bed agriculture locally known as Gal Per Agriculture" is one selected story out of the collection.

On farm level/pond level practices



Sand bed or river bed (*Gal Per*) Agriculture in Wainganga River

Gal Per Agriculture and pond bed fisheries are great traditional techniques for increasing systemic resilience to climate change impact. The area exposed during the lean season - the area between contour of reservoir being full and the contour indicating lowest drawdown level (from October to May), is potentially suited for a combination of sand bed farming and freshwater prawn and fish harvesting. Cultivating or fishing in such areas (especially on tank beds where silt is confined to a limited area) is highly

productive since water is in the vicinity and has a greater access to highly valuable micro-nutrients and humus, which is rare in normal agricultural land. Farmers grow summer fruits/vegetables like; watermelons, musk melons, cucumber, etc. regularly in these tank beds.

These practices lead to regular conflicts between sand extractors and gal per farmers in the Wainganga Basin.

About 180 villages along the Wainganga River with an average population of 500 persons in each village are benefitting from different interventions (agricultural practices, conjunctive use of ground water and surface water, micro-irrigations like drip and sprinklers) that practice sand bed or Gal per agriculture. Unlike agriculture that is conventionally practiced on farmlands during the conventional Kharif and Rabi seasons, the practice of sand bed agriculture is predominantly observed especially in the months of March, April, May and June (the summer months).



These are also the months when the effects of climate change are the most challenging, e.g. there has been a general trend towards delay in the commencement of monsoon and unseasonal pre-monsoon storms during summer. Gal per or sand bed agriculture take advantage of both, the seasonal rain and unseasonal rain. The Gal per agriculture was not encouraged by the Irrigation Department, Government of Maharashtra earlier assuming that it would adversely affect the storage capacity and/or increase siltation in large dams. However, after recognising the benefits of Gal per agriculture, the Irrigation Department has regularised such farming/agriculture practices and moreover the Department started collecting land revenue on it.

The gal per lands are classical examples for pooling resources, where reservoir bunds are being protected, conserved and used wisely and sustainably for coping with the natural vagaries of monsoons, which are being further aggravated by climate change.

It has been estimated that approximately 85,000 people officially pay the revenue of Indian Rs. 200 to 300 per hectare to the Irrigation Department, Government of Maharashtra for undertaking gal per agriculture while 90,000 people from 180 villages are benefitting from it. Sand bed or Gal per agriculture is an example of how an intuitive understanding that the farmers get converted into an agricultural practice and can take care of untimely rains or the delayed monsoons. While experts and scientists get perturbed by the climate changes, the communities at ground level develop or modify already existing techniques and practices in order to develop coping mechanisms which can see them through periods of stress.

Water and Climate Resilience Programme (WACREP) is an innovative initiative of Global Water Partnership (GWP) South Asia devised to improve the climate resilience of South Asian countries to withstand the impact of climate change. More than 40 climate resilience interventions were undertaken in the first phase of WACREP (October 2013 to March 2015).

This is a Success Story documented by IWP partner organisation; Gomukh Environmental Trust for Sustainable Development.

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