

## Understanding Farmers' Adaptation to Water Scarcity: A Case Study from the Wainganga Basin, Maharashtra, India

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Wainganga is the largest sub-basin of Godavari river which occupies an area of 36,306 km<sup>2</sup>. 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. The economy of Wainganga sub-basin is mainly depending on agriculture, forests and fisheries and more than 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 which are being followed in the Wainganga sub-basin have considerably changed for the worse, from the traditional management practices.

The livelihoods which depend on agriculture and fisheries have severely affected with the emergence of climate change and loss of traditional agricultural and fisheries management practices. 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 (IWP) took the initiative to document few case studies under WACREP Phase-I, 'Sand bed or river bed agriculture locally known as *Gal Per* Agriculture' is one of selected stories of the collection.

### On farm level/pond level practices

"*Gal Per* Agriculture" and pond bed fisheries are great traditional techniques for increasing systemic resilience to impact of climate change. 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 *Gal Per* Agriculture, 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 and vegetables like;



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



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 farmers in each village, practice sand bed or *Gal Per* Agriculture. They are benefitting from different agricultural interventions including, conjunctive use of ground

water and surface water, micro-irrigations like drip and sprinklers. Unlike the conventional agriculture that is being practiced on farmlands during Kharif and Rabi seasons; the practice of sand bed agriculture is predominantly observed in the months of March, April, May and June (the summer months). These are also the months where the effects of climate change are most challenging, i.e. there has been a tendency of delaying in the commencement of monsoonal rains and pre-monsoon storms during summer, yet the farmers can take the advantage of both rains – the seasonal and unseasonal, by practicing *Gal Per* Agriculture. 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 possibly will be further aggravated by climate change.

It has been estimated that approximately 90,000 people from 180 villages are benefitting from the practice and 85,000 people pay the revenue of Indian Rs. 200 to 300 per hectare to the Department of Irrigation of Government of Maharashtra for practicing *Gal Per* Agriculture. Sand bed or *Gal Per* Agriculture is an example for how an intuitive knowledge can be converted into an agricultural practice which safeguard farmers from untimely rains or the delayed monsoons. While experts and scientists get perturbed by the effects of climate change, the communities at the grassroots have developed and/or modified the existing techniques and established sustainable agricultural practices to improve coping mechanisms, especially for the time 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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