

# Wadi – An Agri-Horti based Model for Livelihood Development

*A pathway out of the vicious cycle of poverty and migration afflicting small and marginal farmers*

Reduced climate risks – Income security – Environmental co-benefits

40+ villages in 2 districts of 2 States in Central India

700+ acres under climate resilient farming

700+ tribal farmers engaged

25% increase in farm returns

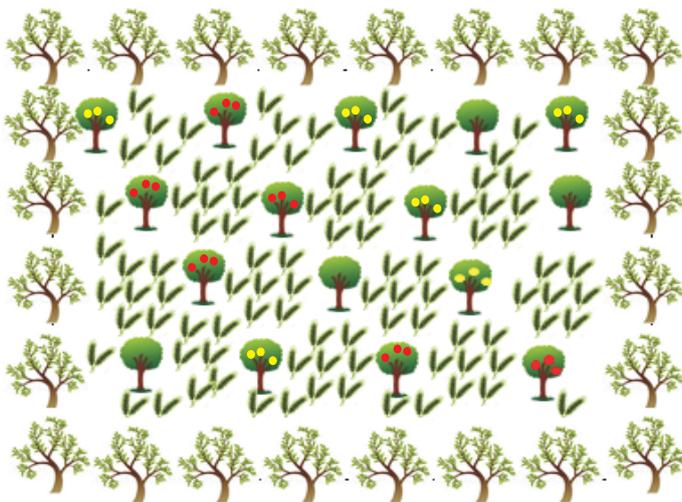
80% reduction in migration amongst beneficiary population

5-7 years is all it takes

*Small and marginal farmers with land-holdings of less than two hectares comprise nearly 85% of all farming households in India. These farms are beset with low productivity that barely provides for the subsistence of the poor farmers. Many farmers abandon their farms and migrate to cities in search of work, ultimately getting trapped in a vicious cycle of poverty and debt.*

*The Wadi model presents a sustainable solution that makes farming profitable even on small plots. The multi-tiered cropping pattern ensures nutritional security of the households by the provisioning of cereals, pulses, vegetables and fruits. This agri-horti based model reduces climate risks, regenerates production potential of the land and ensures that farmers enjoy a regular flow of income due to diversification of production.*

## Wadi Model on the Ground



*A wadi is developed as a 1 acre mini-orchard with around 100 fruit trees of guava, gooseberry (amla) or other varieties appropriate to the region. The space between the fruit trees is used for growing seasonal crops and the periphery is bio-fenced with forestry, fuel or timber species. The wadi is sometimes surrounded by a cattle protection trench that serves to keep grazing animals at bay and also to harvest rainwater.*

### Wadi Model - A Case Study

Bhaiyalal and Chunki Sahariya used to migrate to the city every year to work as wage labourers, barely managing to eke out a living. Cultivating their tiny plot did not seem viable. Today, as proud owners of a wadi in Nayakheda village in Uttar Pradesh, they are able to earn a decent living off their land and do not have to migrate. Their children are now studying in the local village school. Inspired by them, many other farmers are establishing their own wadis, transforming Nayakheda into a hub of vegetable and fruit production.



*The wadi agri-horti based livelihood model is promoted under the Tribal Development Fund of the National Bank for Agriculture and Rural Development (NABARD).*

# Wadi Model - Design and Benefits

## Technical Design

**Key Aspects**

In the wadi model, the combination of species is selected such that they are suited to the agro-ecological conditions.

Optimum productivity levels are achieved through selection of early fruiting and high yielding varieties and adoption of improved farming techniques such as integrated farming systems, organic fertilisers and pesticides and crop rotation with legumes to enrich soil nitrogen levels. When the soil is adequately fertile, triple tier cropping is adopted. In this model, three crops are grown simultaneously on the same plot with one underground crop such as sweet potato and one canopy level crop such as papaya grown along with the usual above ground crop of cereals or pulses or vegetables.

To ensure irrigation, water resources are developed by creation of farm ponds, wells, farm-bunds and cattle protection trenches.

## Process Design

Wadi farmers are formed into farmers' clubs allowing them to engage collectively and share knowledge and experiences. Training and capacity building of the farmers on sustainable and climate resilient agriculture is undertaken as a key component of the wadi initiative.

The farmers clubs are also linked to government agencies such as Krishi Vigyan Kendras and other private agencies for enabling timely access to information and agri-inputs.

## Institutional Design

The contribution of farmers in the form of labour in the establishment of the wadi is ensured. The water resources are created as common assets to be shared by groups of wadi owners.

Women self help groups (SHGs) are also formed as a platform for encouraging their socio-economic empowerment through promotion of savings, facilitation of bank linkages and micro-credit for initiating income generation activities.

Training and capacity building for livelihood diversification through farm and off-farm income generation activities are also conducted for the farmers and the SHG members.

**Benefits**

The trees are able to withstand short term adverse weather conditions unlike seasonal crops, making the wadi relatively climate resilient compared to traditional agriculture.

The organic practices adopted improve the soil organic content and nutrient recycling. The soil conservation measures, along with the root network of the trees leads to reduced runoff and soil erosion and improved ground water recharge.

Pruning of fruit trees and border plantations provides a sustainable supply of fuel and fodder leading to reduced extractive pressure on the forests allowing them to regenerate.

An important co-benefit of wadi is that it contributes to climate change mitigation by converting atmospheric carbon into tree biomass and soil carbon that act as long term carbon sinks.

The wadi farmers' clubs are able to interact with the market with greater collective bargaining power.

Aggregation and collective marketing of their produce also leads to shared and therefore reduced overhead costs.

Contributing labour during wadi establishment promotes greater ownership. Shared ownership and use of the water resources leads to improved water use efficiency.

The training platforms are also used to generate awareness and build capacities on aspects of social development including health, sanitation and drudgery reduction.

## The Economics of the Wadi Model

A typical wadi of 1 acre requires an investment of around Rs. 45,000, including initial establishment cost and subsequent maintenance cost over 5-7 years. The wadi starts yielding earnings of Rs. 8000 -10,000 the first year onwards from seasonal inter-cropping and once the orchard trees start fruiting in the fourth to fifth year, the annual earnings go up exponentially and may reach as much as Rs 50,000 by the time the wadi reaches full maturity in 5 -7 years' time.

## The Opportunity

The tribal population of India is a staggering 80 million. A large proportion of this population is facing severe livelihood stress due to shrinking of the forests on which they have traditionally depended. Not being traditional farmers, their land-holdings usually tend to be small micro-plots. The wadi model provides an effective solution to ensure their livelihood and nutritional security while also helping to regenerate the natural resource base.

This model also has the potential to benefit over 100 million small and marginal farmers across India. The opportunity is thus immense in terms of enhancing the food production of the country using the same amount of cultivated area.

With the wadi intervention areas emerging as hubs of vegetable and fruit production, there is a further opportunity of linking these farmers to local and regional markets through value chain interventions and food processing based enterprises to achieve economic gains for the farmers.



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