



Hiware Bazaar- A village of millionaires, Maharashtra, India

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Short title: Enhancing agriculture by ecosystem management in Hiware Bazaar, India

Key Message: The use of an integrated watershed management based development approach have turned a village's misfortune into an ecological and economic success.

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Picture 1: Borewell blasting
Courtesy: Supriya Singh



Picture 2: Percolation tanks
Courtesy: Supriya Singh

What was the problem?

From the late 1970's to early 1990's Hiware Bazaar in the state of Maharashtra represented a typical semi-arid village. It had run out of most of its natural assets - forests had been cut, water sources ran dry and land had become unproductive. The village faced an acute water crisis and its traditional water storage systems were in ruins. In 1989-1990, only 12% of the land was cultivable, there was rampant poverty and the youth had no employment opportunities. This led to large scale migration to cities, a lot of which was permanent. Of the total geographical area of the village of 976.84 hectares, 795.23 hectares is cultivable. The average annual rainfall in the district is 579 mm, though this is both erratic and uneven. In addition, the village was also beset by social problems such as alcohol addiction and gambling. According to a survey in 1995, 168 out of 180 families lived 'below the poverty line' (Naik 2008, Sakhuja 2008, Sangameswaran 2006).

What was the approach taken and how were ecosystem services considered?

Under the leadership of Popatrao Pawar, who won the Gram Panchayat (Village Council) Elections in 1989, the idea of undertaking watershed development was inspired from a community initiative in the nearby village of Ralegan Siddhi. Located 40 km away, this village had turned its misfortune into an economic and ecological success. Following a visit to Ralegan Siddhi, the village of Hiware Bazaar applied to the *Adarsh Gaon Yojana (AGY)* or Ideal Village Scheme of the state government. To implement the AGY, the village prepared a five-year plan and an integrated model of development with water conservation as its core was adopted. The Yashwant Krishi Gram and the Watershed Development Trust were instituted to implement the development works under AGY. The Adarsh Gaon Yojana was based on five principles: a ban on liquor, cutting trees and free grazing; family planning and contributing village labour for development work. This resulted in planting of trees on forestland and a ban on grazing in these areas (Sangameswaran 2006, Tiwari et al. 2007).

The implementation of the Employment Guarantee Scheme (EGS) was another turning point for Hiware Bazaar. The village prepared another five-year plan from 1995-2000 specifically targeting ecological regeneration, which became the basis for implementing EGS. It ensured that all departments implementing projects in the village had an integrated plan. The implementation and the decision making process is democratic and participatory in nature. The funds for the regeneration plans in Hiware Bazaar were received from the EGS scheme. In total the state government spent Rs. 42 lakhs under the Employment Guarantee Scheme (US \$ 95,216.50 as per 2007 exchange rates) to treat 1000 ha of land at Rs. 4000 (US \$ 90.68 as per 2007 exchange rates) per hectare (Sakhuja 2008).

Thus, in order to regenerate degraded village forests and catchments and to restore watershed ecosystems, the village was divided into three micro-watersheds - the first with an area of 612.14 hectares, the second with an area of 123.4 hectares and the third with an area of 241.3 hectares. The principal watershed works constructed included continuous contour trenching and tree plantation (on forest, private and panchayat land), contour bunding, nala (drain) bunding, two percolation tanks and five storage tanks. 40,000 contour trenches were built around the hills of this village to conserve rainwater and recharge groundwater. Villagers took up plantation and forest regeneration activities. All the activities ensured that the rainwater was effectively trapped. Several wells were dug which brought about an increase in irrigation. Drip irrigation and open well irrigation were encouraged, and the use of groundwater was minimized. For example, no bore wells were allowed to be used for irrigation and water-intensive crops like sugar cane and banana were not permitted. Also, one side of the village ran out of groundwater sooner than the other and studies found that this portion of the village had little permeability due to presence of hard rocks in the area. Bore well blasting was used to create fissures in the hard rock and improve permeability. In a span of four years, most of the work under AGY was completed (Sangameswaran 2006).

What resulted from taking up an ecosystem service perspective? Did the approach influence public management or result in policy uptake?

The implementation of AGY and EGS and sound watershed management techniques transformed Hiware Bazaar into the ideal village it is today. As a result of the restoration of the watershed, many wells in the village began collecting enough water to increase the irrigation area from 20 ha to 70 ha in 1993. The 70 ha regenerated forest helped in treating the catchments; contour bunding stopped runoff and saved farms from silting, and around 660

water-harvesting structures caught rainwater. The number of wells increased from 97 to 217. Irrigated land has gone up from 120 ha in 1999 to 260 ha in 2006. Grass production went up from 100 tonnes in 2000 to 6,000 tonnes in 2004. With more grass available, milch livestock numbers have gone up from 20 in 1998 to 340 in 2003 according to a government livestock census. Milk production rose from 150 litres per day in the mid-1990s to 4,000 litres now.

According to a 1998 survey, the number of families living below the poverty line fell from 168 to 53 in a span of three years from 1995-1998. There has been a 73 per cent reduction in poverty, due to profits from dairying and cash crops. Today, one fourth of the village's 216 families are millionaires (in terms of Indian Rupees INR). The per capita income of the village is twice the average of the top 10 per cent in rural areas nationwide (Rs. 890 per month = US \$ 20.18 as per 2007 exchange rates).

Since 2002, Hiware Bazaar has been doing an annual budgeting of water assisted by the Ahmednagar districts' groundwater department, wherein the total amount of water available in the village is measured, uses estimated and then agricultural cropping to be taken up is prescribed. All this is done through the village council whose decisions are binding. Water for drinking purposes (of humans and animals) and for other daily uses gets top priority. 70 percent of the remaining water thereafter is set aside for irrigation. The remaining 30 per cent is kept for future use by allowing it to percolate and recharge groundwater. Taking this broad framework for water use, a yearly audit is carried out to assess the water available and adjust its use accordingly.

A partnership between the government and the village is apparent; it shows that a strong village community can make best use of the available resources with a vision, institutional set up and efficient management. Hiware gave people a stake in the work and made the linkages between ecosystem services, governance and economics complete for people to see and work on. The watershed development programmes in the state and the country have tried to take a similar approach to regeneration of resources by advocating an integrated, decentralized development model. The new National Rural Employment Guarantee Act 2005 (NREGA) has taken on the same principles and advocates water management (Sakhuja 2008, Sangameswaran 2006).

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Picture 3: Charts displaying the various initiatives at Hiware Bazaar
 Courtesy: Supriya Singh



Picture 4: Residents using modified gas stoves which use gobar gas
 Courtesy: Supriya Singh



Picture 5: The dairy farm
Courtesy: Supriya Singh



Picture 6: Social messages pasted around the square
Courtesy: Supriya Singh