

# INDIA: KARNATAKA WATERSHED DEVELOPMENT "SUJALA" PROJECT

INNOVATION IN PARTICIPATORY WATERSHED DEVELOPMENT TO IMPROVE NATURAL RESOURCE PRODUCTIVITY AND RURAL LIVELIHOODS

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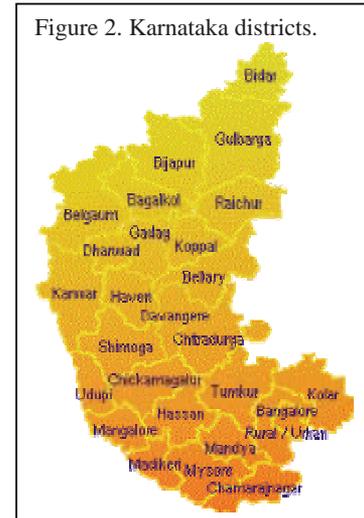
*The Karnataka Watershed Development Project (KWDP), known locally as "Sujala", was initiated in the year 2001 and is being implemented in seven districts of Karnataka. The project is scheduled to end on March 31, 2009. The project covers 516,000 hectares of land spread over 77 sub-watersheds, 1270 villages benefiting nearly 400,000 households. The project objective is to improve the productive potential of selected watersheds and their associated natural resource base. It is also to strengthen community and institutional arrangements, promote participatory involvement of primary stakeholders/beneficiaries and offer assistance to women, landless and other vulnerable groups by supporting investments in income generation activities to accelerate their entry and expand their participation.*

## Background

Karnataka, a state in the south-west of India, has a total land area of 191,791 km<sup>2</sup> and a population of approximately 53 million, giving a population density of 276 people per km<sup>2</sup>. The state is enclosed by mountain ranges along the much of the western, eastern and southern regions with peaks reaching 1,500 meters above sea level. Annual average precipitation ranges between 500 and 3500 mm. Rainfall is lowest in the eastern regions of the state and increases in the western areas, reaching its maximum over the coastal zone. Karnataka is one of the more developed states in India; its Human Development Index (HDI) of 0.650 in 2001 ranks 7th in the country and improved by 20 percent over the 1991 figure of 0.541. Despite this positive performance, a number of development challenges remain. For example, adult literacy is 66 percent, and poverty is a major problem in rural areas, and especially in drier northern and southern districts along the eastern border.

Karnataka is predominantly an agricultural state with more than 70 percent of the major agriculture area under rainfed conditions. Recurrent droughts, soil erosion, erratic rainfall, and depleting ground water have impacted the potential productivity significantly. Rainfed areas are often prone to these multiple risks; therefore efficient and sustainable use

Figure 2. Karnataka districts.



Karnataka has 13 million hectares of potential watershed treatment area.

of natural resources has become a basic need for rural economic development. In this context, *watershed based programs must improve the productivity of natural resources while also addressing broader socio-economic development priorities.*

Watershed development programs have been operating in India for the past several decades to improve the production potential of dry and semi-arid regions of the country. Program design has evolved over time from a purely technical, top-down solution with little involvement of communities and farmers, to a more recent model that promotes greater local participation and encompasses traditional soil and water conservation as well as rural livelihood development.

## Problem Analysis

Prior to the project, the target districts were characterized as drought-prone and dominated by rain-fed agriculture around a narrow range of 2-5 crops with average yields of between 525 and 988 kg/ha. Soil erosion was high and leading to declining productivity. The total population in the project sites was around 1 million people and characterized by high rates of out-migration, especially for younger men seeking work in urban centers such as Bangalore. **Average annual household income was approximately US\$222.** Groundwater availability from existing tube-wells was only 3-4 months following monsoon rains. Common lands were deteriorating through poor management. Watershed development was still largely delivered in the state through a non-participatory model, resulting in little social mobilization and development of

A key emphasis of the project is strengthening the capacity of communities in the project districts for participatory involvement in planning, implementation, social and environmental management and maintenance of assets emanating from local development programs. It is crucial to have the implementing department operate in more socially inclusive manner, within the framework of a convergent watershed development plan which will be achieved by implementation through community groups.

community institutions. Self-help groups were weak and unable to build financial capital to channel into livelihood opportunities.

## Project Structure and Institutions

The project is addressing the key development objectives through four components: 1) social mobilization and institution building to help plan and implement participatory watershed treatments; 2) farming system intensification and participatory research; 3) income generation activities to benefit socially vulnerable and landless groups; and 4) capacity building, and monitoring and evaluation. The project is being implemented in a phased manner; Phase-1 consists of 10 sub-watersheds; Phase-2 covers 20 sub-watersheds; and Phase-3 covers the final 47 sub-watersheds. The project is now working mainly on Phase 3 sub-watershed.



*Typical pre-project land degradation*



*Civil works - increasing soil productivity*

## PROJECT HIGHLIGHTS

The project uses a complex institutional structure to develop critical partnerships between government technical specialists, non-government organizations (NGOs), communities, local authorities, and research organizations. Some highlights are:

- Involving NGOs at sub-watershed, district and state levels to facilitate the awareness building, capacity building, participative project planning, implementation and monitoring.
- Formation of community based organizations like Self-Help Groups, comprising of mostly women and landless members; Area Groups (mainly landowning farmers) and an Executive Committee (at community level). Area Groups are the basic units of planning in case of land based activities and these plans are further consolidated at the Micro watershed levels. Similarly, Self-Help Groups are the basic units of planning for income generation activities and these sub-plans are consolidated at micro-watershed level.
- Sujala Watershed Sangha (SWS) and 14 member executive committee with registration under the Registrar of Societies Act 1960, to combine micro-watershed community representatives at a sub-watershed level (10 micro-watershed per sub-watershed).
- Establishment of district level technical teams comprising of government specialists from various agencies (Watershed, Agriculture, Minor Irrigation, etc) to promote more holistic micro-watershed planning with NGOs and communities.
- Capacity building of partners and stakeholders on technical, social and environmental issues of watershed development at all levels through several local universities.
- Involvement of the Panchayat members in the Executive Committee for SWS.
- Antrix Corporation (part of Indian Space Research Organization) providing advanced satellite imagery and Geographic Information System services for micro-watershed planning and also leading third-party monitoring and evaluation.

## Results and Impacts

Soil and water conservation works have been completed on over 314,000 ha, improving average crop yields to between 525 and 1,136 kg/ha, and broadening crop diversity to 4-9 crops, especially cash crops. Groundwater availability following monsoon rains has improved to 4-6 months. **Average annual household income in project areas has increased from US\$222 to US\$373.** The project has already achieved its target of establishing 4,300 farmer groups and 6,600 new self-help groups to sustain participatory watershed management across 7,000 communities in 742 micro-watersheds.

## Additional Impacts:

- New participatory micro-watershed planning approaches have resulted in highly integrated micro-watershed plans being prepared by communities, who have greater ownership and commitment.
- Groundwater yields have increased by nearly 1,000 liters per hour, giving farmers greater choice of crops and in many cases, double cropping on arable lands. There are also measurable increases in biomass production on common lands.
- For communities where implementation has been completed, crop yields have increased by 24 percent over the baseline, cropping patterns have



*Community participation and planning at work*



*A new entrepreneur - small shop and call box*

shifted to higher valued crops, and milk yields have been enhanced by 15 to 20 percent.

- Self-Help Groups have flourished with project support; taking into account member savings, project revolving funds, and leveraged commercial loans, the **total potential capital base in these community groups is almost US\$13 million** that is being used to help establish small businesses, particularly among women and landless. The majority of members are women. More than 60 percent of the Self-Help Groups

are linked to commercial financial institution. Money-lenders are no longer a major force in these communities.

- The increase in average income has contributed to a reduction in migration by about 70 percent. Fewer young men feel they no longer have to leave the community to find work.
- As a measure of success, the project recently achieved national recognition through two prestigious awards. The first was the National Productivity Award given to the case study of





*Gopal mitras at work with veterinary services*

Katnur Micro-watershed of Dharwad – with a cash value to the community of US\$2,600. The second was the National Water Award (Bhumijal Samvardhan Puraskar), given to Uthanur Panchayat in Mulbagal taluk in Kolar District.

The partnership between government, non-government organizations and communities is opening up new opportunities for rural people to enhance the productivity of the natural resource base that underpins their livelihoods. Leading state research organizations are also key partners to help

farmers increase output from crops, horticulture and livestock. The project has made inroads to strengthen linkages with local authorities to complement ongoing government policy reform around decentralization. The project has initiated convergence activities with the state government Total Sanitation Campaign to construct new toilets in all target communities. The project has also linked with the state government Yashaswini Scheme to provide low-cost health insurance to 4,000 beneficiaries. Steps are underway to develop technical links with watershed projects in Mexico and Turkey to improve knowledge and experience sharing.

### Innovations in the Project

The project has played a key role in helping the government of Karnataka test new participatory approaches for integrated watershed planning and implementation. More meaningful engagement with communities is based on extensive capacity building, social mobilization and group formation, and the use of thematic maps for participatory watershed planning. The new model also draws in non-government organizations as active partners.





Based on M&E results for livelihood development, it was evident that around 70 percent of the women and landless participating in the Income Generating Activity component preferred to enhance their incomes through livestock and poultry production. The project partners agreed to introduce village-based private veterinary service providers, called “*Gopal Mitras*” to promote effective and low-cost service to people. Field visits and M&E data have confirmed the important role that *Gopal Mitras* are now playing in many communities. All *Gopal Mitras* have mobile phones to make it easier for people in more distant villages to call via a community call box. **Earnings by the Gopal Mitras appear to be between US\$75 and US\$375 per month with an average of around US\$125.**

An innovative approach quality control system for civil works such as field bunds and check dams has been implemented with excellent results. The Quality Management System is centered around an OK card system where farmers maintain a file card for each structure being built on their land. The cards outline key aspects of design and construction, as well as

longer-term maintenance, particularly for works involving masonry, concrete and earth fill. The cards are signed off by government technical staff to ensure quality standards are sustained.

An independent team from Antrix Corporation, part of the Indian Space Research Organization in Bangalore provides ongoing technical, and monitoring and evaluation services to the project. Antrix has developed cutting edge remote sensing, geographic information systems, and digital terrain modeling to complement more traditional field surveys. These tools allow better information to be used by communities and government/NGO partners in the participatory micro-watershed planning, project implementation and evaluation. In fact, the system works so well, that mid-way in the project measurable progress against the development objectives could already be demonstrated. Antrix also carries out short-term studies in response to management questions based on regular M&E reporting. Examples include:

- Assessment of common property resources developed under the project

- Investment patterns and equity in Phase II
- Sustainable of common property investments through the project
- Assessment of land use and land cover transformation
- Case studies of project impacts and achievement of development objectives
- Executive committee assessment and grading
- Inputs to performance based contracts for NGOs
- GIS analysis of common lands across slopes
- Review of training programs
- Evaluation of ground and surface water quality in selected sites

## Future Directions

The KWDP goes beyond having potential for replication – it is already being replicated. The Government of Karnataka Agriculture Minister announced in the Legislative Assembly in 2007 that it will be expanding the Sujala project (KWDP model) to five other arid, rain-fed districts in the state. In July, 2007 the Prime Minister of India,

Minister of Agriculture, and Deputy Chairman of the National Planning Commission were in Bangalore to review the impacts of centrally funded land-based rural development and natural resource programs. Based on the success of the Sujala project, the Government of Karnataka will be replicating the model in six additional districts financed with US\$47 million from the Prime Minister's Rehabilitation Package for Distressed Districts. The Watershed Development Department has also proposed that the National Bank for Agriculture and Rural Development (NABARD) help finance treatment of an additional 150,000 hectares of state land using the Sujala model in districts where the KWDP does not presently operate. The project has also resulted in a new state policy for co-management of common lands in watersheds that will have long-term impacts for improved natural resource conservation and rural livelihoods.

The central government Ministry of Agriculture and new National Rainfed Area Authority are adopting features of the project's innovative monitoring and evaluation system for all government watershed programs throughout India. Lessons learned from



the project have been adopted into new draft national watershed guidelines by the government of India. The approach of blending locally sourced high technology with traditional field monitoring is recognized throughout India as a best practice model. These moves are bringing Sujala and the World Bank attention at the national level and helping promote the replication of an integrated approach to watershed development to other states.

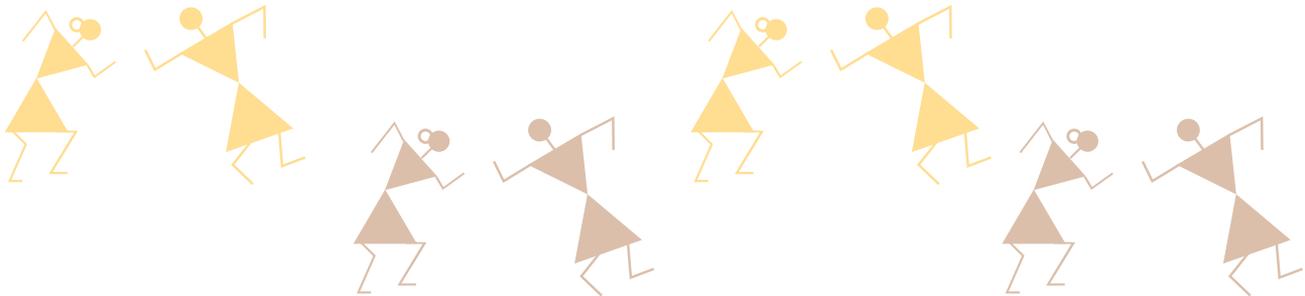


Total Project Funds: US\$127.6 million

World Bank IDA Credit US\$100.5 million

Beneficiary contributions US\$12.8 million

Government financing US\$14.3 million



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