



# **Watershed Management Programs**

June 2016

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# Abbreviations

<b>AIBP</b>	Accelerated Irrigation Benefit Programme
<b>CBO</b>	Community-Based Organizations
<b>CCT</b>	Continuous Contour Trenches
<b>CPR</b>	Community Property Resources
<b>CSR</b>	Corporate Social Responsibility
<b>DDP</b>	Desert Development Programme
<b>DLR</b>	Department of Land Resources
<b>DPAP</b>	Drought Prone Areas Programme
<b>DRDA</b>	District Rural Development Agencies
<b>GoI</b>	Government of India
<b>IAEPS</b>	Integrated Afforestation and Eco-Development Scheme
<b>IWDP</b>	Integrated Wastelands Development Program
<b>IWMP</b>	Integrated Watershed Management Program
<b>MoA</b>	Ministry of Agriculture
<b>MoEF</b>	Ministry of Environment & Forests
<b>MoRD</b>	Ministry of Rural Development
<b>MOU</b>	Memorandum of Understanding
<b>MoWR, RD &amp; GR</b>	Ministry of Water Resources, River Development & Ganga Rejuvenation
<b>NABARD</b>	National Bank for Agriculture and Rural Development
<b>NRAA</b>	National Rain-fed Area Authority
<b>NWDPRA</b>	National Watershed Development Project for Rain-fed Areas
<b>OFWM</b>	On-Farm Water Management
<b>PRA</b>	Participatory Rural Appraisals
<b>PMKSY</b>	Pradhan Mantri Krishi Sinchayee Yojana
<b>PRI</b>	Panchayati Raj Institutions
<b>SC</b>	Scheduled Caste
<b>SHG</b>	Self-Help Groups
<b>ST</b>	Scheduled Tribe
<b>VDC</b>	Village Development Committees
<b>WDT</b>	Watershed Development Team
<b>WSD</b>	Watershed Development

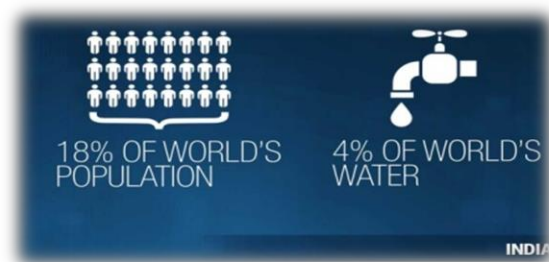
# The Water Crisis

India is home to 18% of the world's population but only 4.2% of its water resources and 1% of its forest cover<sup>1</sup>. This vast population is sustained by 142 million hectares of agricultural land, which is either completely dependent on rainwater or rain-fed<sup>2</sup>. At the same time the per capita availability of agricultural land among the developed nations is 1.4 ha per farmer, while in India it is merely 0.3 ha<sup>3</sup>. Much of this land is also experiencing acute shortage of moisture content and depleting groundwater levels. Water shortages and volatility in availability make Indian agriculture highly vulnerable to both pre- and post-production risks.

In much of India, very little rainwater is captured, infiltrated and stored as groundwater – most is lost in runoff to oceans and evaporation, usually taking fertile surface soil with it. In light of this, the only sustainable and eco-friendly solution to manage and raise groundwater levels, and revive water resources, is the development of watershed management programs to harvest, secure and conserve rain water.

## Water: Issues and Concerns

- Depleting ground and surface water tables
- Dwindling quality of water
- Soil erosion and contamination
- Multi-nutrient deficiency of soil
- Droughts and Famines
- De-forestation
- Rapid urbanization
- Inadequate water policies



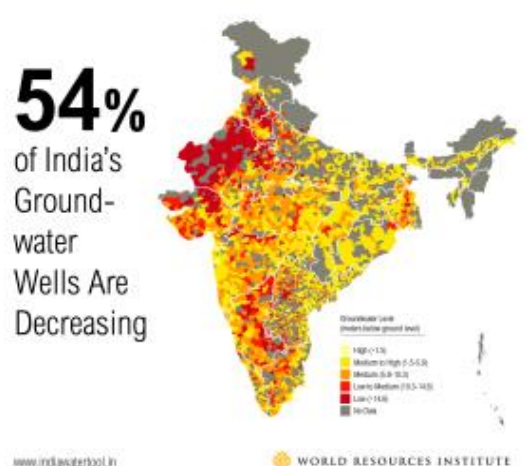
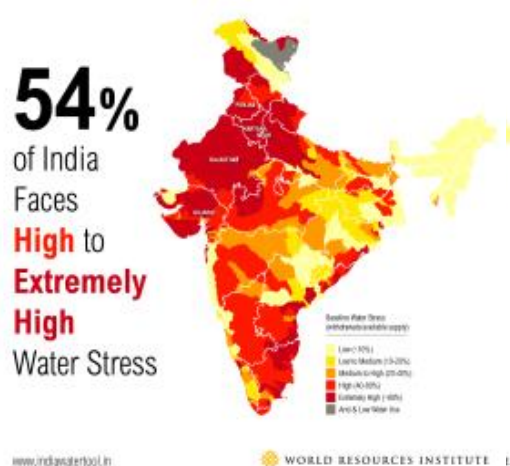
<sup>1</sup> Thakare, Parag R., Jadhav, Raj A. and Kumawat Hastimal S. 2013. Watershed Management-A case study of Satara Tanda Village. International Journal of Innovative Technology and Exploring Engineering (IJITEE), (3) 3: 2278-3075.

<sup>2</sup> Joshi PK, Jha AK, Wani SP, Sreedevi TK and Shaheen FA. 2008. Impact of Watershed Program and Conditions for Success: A Meta-Analysis Approach. Global Theme on Agro ecosystems, Report 46. International Crops Research Institute for the Semi-Arid Tropics and National Centre for Agricultural Economics and Policy Research.

<sup>3</sup> Rao, Srinivasa., Lal, Ratan., Prasad, Jasti., Gopinath, Kodigal., Singh, Rajbir., Jakkula, Vijay S Kanwar., Sahrawat L., Venkateswarlu, Bandi., Sikka, Alok K, and Virmani, Surinder M. 2015. Potential and Challenges of Rainfed Farming in India. Advances in Agronomy. Academic Press. pp. 113 -114.

## Hard Facts

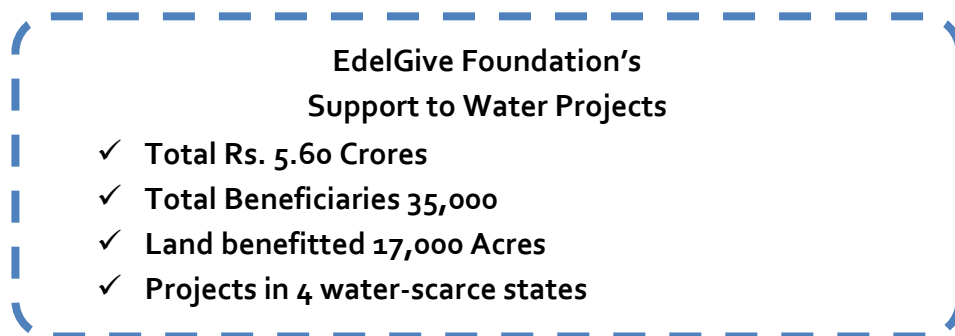
- India's annual per capita availability of water decreased from 6,042 cubic meters in 1947, to 1816 cubic meters in 2001, and was down to 1,545 cubic meters in 2011.
- By 2025, India's annual per capita availability of water will further reduce to 1,340 cubic meters and by 2050, to 1,140 cubic meters.
- 90 % of waste water discharged in rivers fails to meet environmental norms.
- 65% of rainwater runoff goes into the sea.
- In India, the agricultural sector is the biggest user of water, followed by the domestic and industrial sectors.



### Probability of occurrence of drought in different meteorological subdivisions

Meteorological subdivision	Frequency of deficient rainfall (75% of normal or less)
1 Rajasthan	Once in 2 years
2 Gujarat, East Rajasthan, Western Uttar Pradesh	Once in 3 years
3 Tamil Nadu and Telangana	Once in 2.5 years
4 Karnataka, Eastern Uttar Pradesh & Vidarbha	Once in 4 years
5 West Bengal, Madhya Pradesh, Konkan, Bihar and Orissa	Once in 5 years
6 Assam	Very rare, once in 15 years

Source: National Rainfed Area Authority, 2013



## **EdelGive Foundation and Watershed Program: 2011 - 16**

Over the last eight years, the EdelGive Foundation has been a catalyst for social change in the development sector, especially in the fields of Livelihoods, Women's Empowerment and Education. In livelihoods, the focus is almost entirely rural and the Foundation's approach focusses on three themes – Migration, Financial Inclusion and Water. Agriculture dominates India's rural economy, but its contribution to India's GDP has declined from 52% in 1950 to 14% in 2013<sup>4</sup>. This, coupled with a lack of employment opportunities and poor availability of broader infrastructure such as education and roads, has caused severe economic and social strife in rural India.

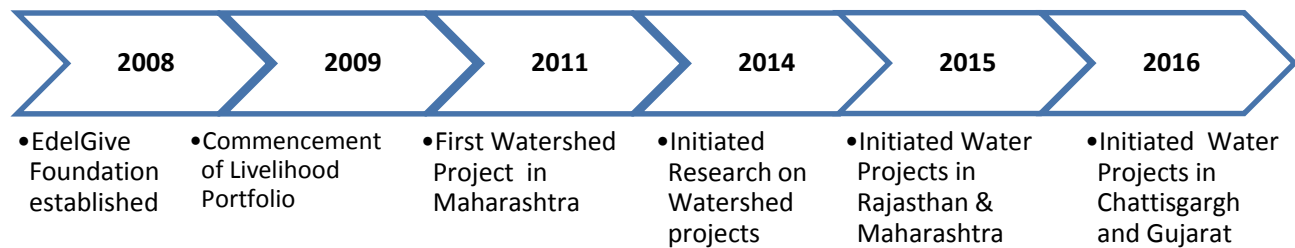
Scarce local employment opportunities and the increasing unviability of agriculture due to water shortages and ever smaller land holdings have accelerated the urban migration of low-skilled and less-educated rural men. This puts pressure on cities and aggravates disparities in migrant rights, including access to health, education and basic human rights. Their families remain behind to battle the financial hardship of rural life, relying heavily on remittances. The net result is a vicious cycle of grinding poverty, and lack of access to basic health and education, compounded by a lack of access to basic financial literacy and inclusion in the absence of credit and social security schemes.

EdelGive's intelligent, community-based interventions in the areas of Migration, Water and Financial Inclusion draw on our vast experience on the ground with some of the most highly-regarded organizations in this sector. This wide-ranging exposure to rural livelihood programs has given EdelGive rich insights into the various water problems facing rural India. These range from severe drought, to erratic rainfall, to pollution, wastage and overuse of water resources. To address these issues, EdelGive Foundation began systematic interventions in water projects through integrated watershed management programs in 4 states, implemented by grassroots organisations.

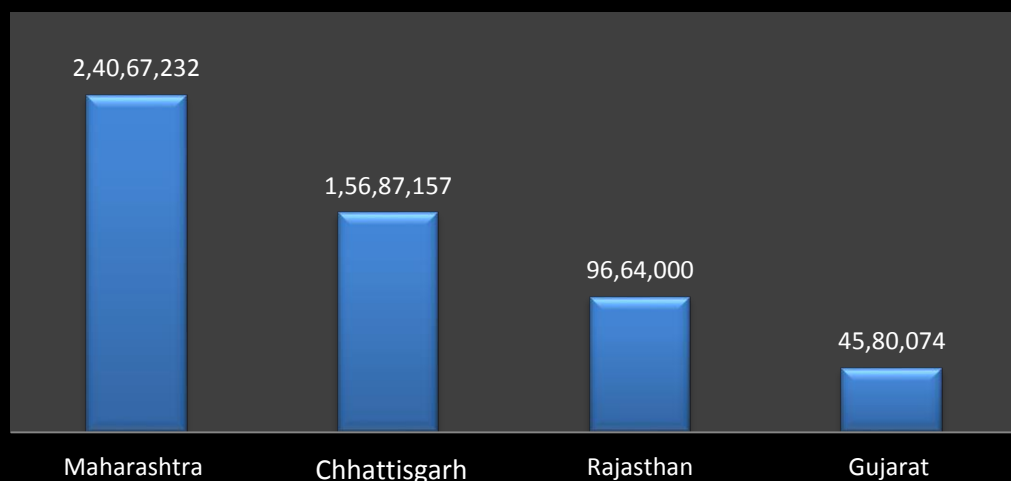
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<sup>4</sup> Central Statistical Organisation (CSO) 2014.

## EdelGive Foundation's Timeline in Watershed Program

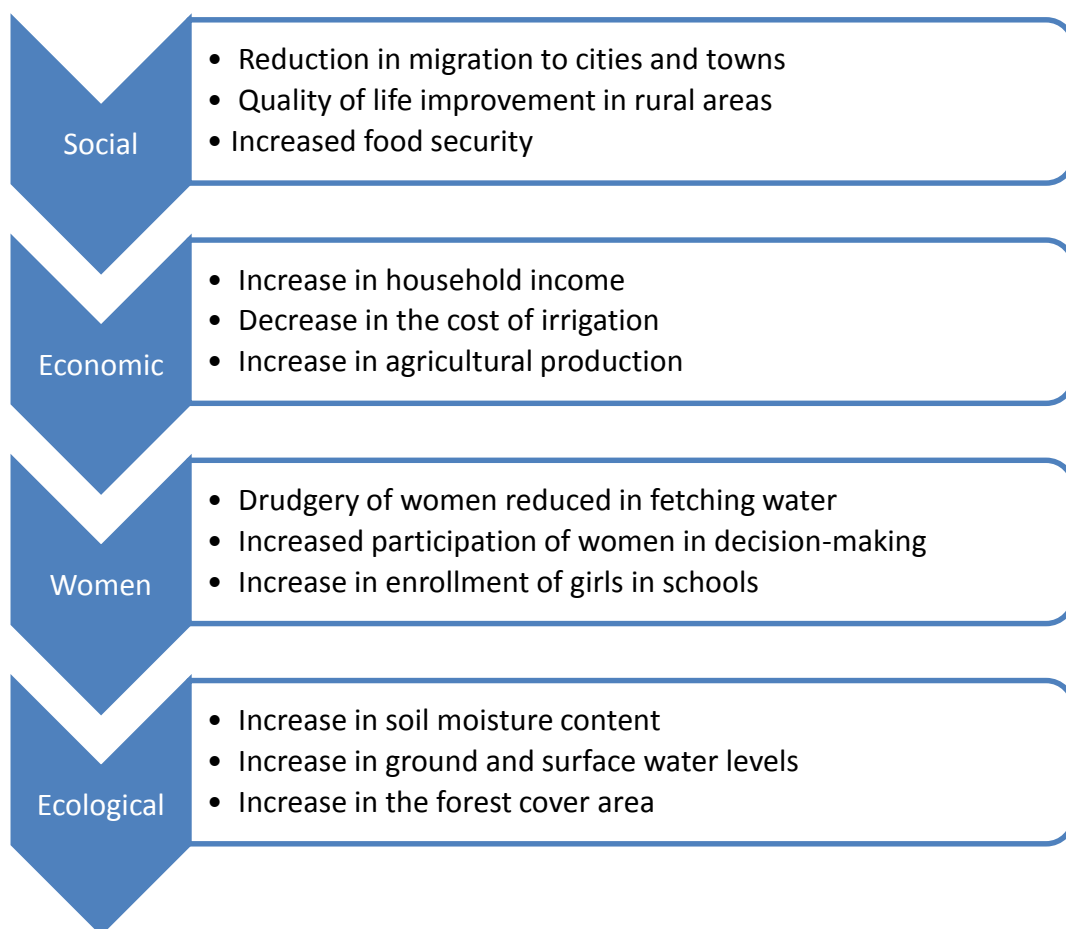


### EdelGive Investments: 2011 - 2016 Aggregate Funding Statewise



## Why EdelGive Foundation works in Watershed Projects

Creating sustainable livelihoods is the surest way to help individuals escape the vicious circle of poverty. The main effect of poverty is the inability to meet essential needs, so creating sustainable livelihoods has wide-ranging benefits. The key outcome is that individuals can take charge of their own lives, choose the services and products of which they wish to avail, and invest in themselves and their future generations, rather than relying on charity or public services for their basic needs. Rural livelihoods fall into two broad categories: farm and non-farm based activities. Watershed management programs are a part of farm-based activities and have several impacts.





# EdelGive Foundation's Watershed Program Framework

In the course of designing its approach to watershed management, EdelGive consulted a number of water project experts, scoped over forty organisations, visited over ten organisations and finally initiated funding to seven organisations (the details of which are attached at the end of this document) across four states in India. While selecting each organisation for funding by EdelGive a long and meticulous process was followed:

## Process flow

- Research & Scoping of organisations
- Proposal submission
- Field and community visit
- Due Diligence
- EdelGive Board Evaluation
- Grant-making by signing MOU
- Monitoring and Evaluation
- Impact Assessment

## Framework of evaluation

- ▶ 'Demand-driven' rather than 'supply-driven' water projects
- ▶ Implementation through local community, village-level committees and SHGs
- ▶ Greater involvement of women and vulnerable groups
- ▶ Greater community participation, contribution and resource-sharing
- ▶ Integration of traditional and modern techniques for water security
- ▶ Decentralized process of decision-making
- ▶ Indigenous solutions to address local problems of water scarcity
- ▶ Generating demonstrable economic benefits to the community
- ▶ Equal rights on common property resources

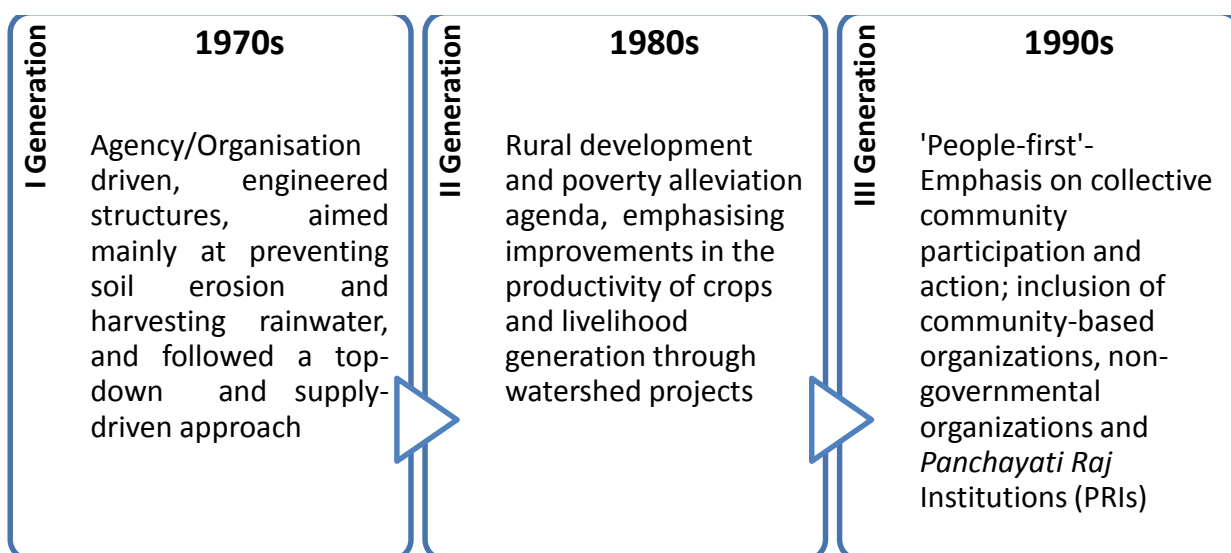
## Implementation process

- Baseline Survey
- Community Mobilisation
- Formation of Community-Based Organisations
- Village meetings & Participatory Rural Appraisals
- Village Development Committees' Training
- Site Identification for Water Shed Structures
- Construction and Implementation of Watershed Programs
- Community Monitoring and Maintenance
- Impact Assessment of Watershed Management Programs
- Scaling and Replication of Watershed Programs

# History of Watershed Management Programs

Several studies have shown that effective management of natural resources through watershed management programs delivers sustainable ecological benefits and drives community development. This includes increasing crop production, recharging groundwater levels, rejuvenating dried-up rivers and ponds, improving livelihoods, reversing the process of migration, protecting the environment, boosting women's empowerment and ensuring food, fodder and fuel security<sup>5</sup>.

Over the past thirty years, watershed management programs have produced three major changes in India. The first generation of watershed projects was introduced in the 1970s, the second generation by the mid-1980s and the third by the early 1990s<sup>6</sup>. However, a closer examination of current watershed programs and structures reveals that many are still executed under the first- and second- generation models i.e. with a top-down (rather than a bottom-up approach) and smaller participation from communities.



## 1. Pre-Independence Scenario

Agriculture has been the driving force of the Indian economy, both before and after Independence, and the majority of the rural population was heavily dependent on

<sup>5</sup> Joshi PK, Jha AK, Wani SP, Joshi L and Shiyani RL. 2005. Meta-analysis to assess impact of watershed program and people's participation. Research Report 8, Comprehensive Assessment of watershed management in agriculture. International Crops Research Institute for the Semi-Arid Tropics and Asian Development Bank. 21 pp.

<sup>6</sup> Wani SP, Ramakrishna, Sreedevi TK, Long TD, Thawilkal Wangkahart, Shiferaw B, Pathak and Kesava Rao. 2006. Issues, concepts, approaches and practices in the integrated watershed management. Experience and lessons from Asia in integrated management of watershed for agricultural diversification and sustainable livelihoods in Eastern and Central Africa: Lessons and experiences from Semi-Arid South Asia. Proceedings of the International Workshop held in December 2004 at Nairobi, Kenya. pp. 17–36.

agriculture for its livelihood. The following is cursory glance at references to watershed irrigation in ancient Indian folklore and literature:

- ✦ The Satavahanas (1<sup>st</sup> Century B.C. – 2<sup>nd</sup> Century A.D.) introduced brick and ring wells for extraction of water.
- ✦ Lake and well irrigation techniques were developed on a large scale during the Pandya, Chera and Chola dynasties in southern India (1<sup>st</sup> to 3<sup>rd</sup> Century A.D) and large dams were built across Cauvery and Vaigai rivers.
- ✦ In the south, the Pallavas expanded the irrigation systems in the 7<sup>th</sup> Century A.D. The famous Cauvery Anicut was built during this period.
- ✦ The Chola period (985-1205 A.D) witnessed the introduction of advanced irrigation systems, which brought about prosperity in the Deccan region.
- ✦ The Rajput dynasty (1000-1200 A.D) promoted irrigation works in northern India. The 647 sq. Km. Bhopal Lake was built under King Bhoja.
- ✦ In eastern India, Pal and Sen Kings (760-1100 A.D) built a number of large tanks and lakes in their kingdoms.
- ✦ Rajtarangini of Kalhana gives a detailed account of irrigation systems developed in the 12<sup>th</sup> Century in Kashmir.
- ✦ In the Medieval period, Mohammad Bin Tughlaq (1325-1351 A.D.) encouraged the farmers to build their own rainwater harvesting systems and wells.
- ✦ Feroze Shah Tughlaq (1351-1388 A.D.) built the Western Yamuna Canal in 1355 to extend irrigation facilities in the dry land tracts of the present-day Haryana and Rajasthan.
- ✦ Emperor Shahjahan built many canals, among them the Bari Doab or the Hasli Canal.
- ✦ Under the rule of Rangila Muhammad Shah, the Eastern Yamuna Canal was built to irrigate large tracts in Uttar Pradesh.
- ✦ The Vijaynagar Kings (1336-1548 A.D.) built large and small storage tanks in the south.
- ✦ Anantraj Sagar, a 1.37 km. earthen dam tank, was built along the Maldevi River.
- ✦ Emperor Krishnadevaraya built the well-known Korangal dam.
- ✦ Canal irrigation was first introduced by the Bahmani rulers (1388-1422 A.D.) in the eastern provinces of the Deccan.
- ✦ An extensive network of canals was subsequently built by Sultan Zain Uddin (1420-1470 A.D.) in Utpalpur, Nadashaila, and Bijbihara and Advin areas of Kashmir.



## **2. Post-Independence Scenario**

After Independence, the tempo of irrigation development was sharply accelerated with the objective of attaining self-sufficiency in food grains to meet the needs of a growing population. Construction of large dams like Bhakra, Hirakud, and Nagarjunasagar were taken up and completed. The criteria for economic evaluation of these projects were changed from a purely financial evaluation approach to one of cost-benefit evaluation.

The Government's Return-on-Investment now became secondary, and the benefit to the farmer (if at a cost to the Government) became the principal criterion. The development of irrigation took place in successive plans by leaps and bounds. The country achieved self-sufficiency in food grains, and import of food grains became a thing of the past. The Second Irrigation Commission, set up in 1969, while not advocating any major change in the policy of irrigation development, cautioned in its report that areas like conjunctive use of surface and groundwater, command area development. The flow of institutional finance was generally about 60% of the total outlay for groundwater development. Groundwater development became critical to the economy because of its role in stabilizing agriculture. There was even greater emphasis on this resource during recurring periods of drought, as the levels of surface reservoirs dwindled and groundwater provided an alternative.

## **3. Government and Integrated Watershed Management Program**

The Integrated Watershed Management Programme (IWMP) India has become a part of the national approach to poverty alleviation by improving agricultural production in rain-fed regions. Since the 1970s, the programme has sought to restore degraded watersheds in rain-fed regions to increase their capacity to capture and store rainwater, reduce soil erosion, and improve soil nutrient and carbon content, so as to boost agricultural yields and local incomes. In 2010, Government decided to integrate several centrally-sponsored schemes into the IWMP, among them the former watershed development programmes of the Department of Land Resources, including the Drought Prone Areas Programme (DPAP), the Desert Development Programme (DDP) and the Integrated Wastelands Development Programme (IWDP).

### **a. Understanding the Integrated Watershed Management Program**

More than 54% of cultivated area across India is rain-fed. Many of these areas are plagued by poverty, water scarcity, low productivity, and malnutrition, and are vulnerable to acute land degradation. The watershed development programme has been developed to address the grave concerns of the rain-fed or waste land areas, and the cost of the program is shared by the Central and State Governments in a 90:10 ratio.

### **b. Modus operandi of Integrated Watershed Management Program**

## Organisational Structure and Implementing Agencies of Watershed management program

### 1. Ministry of Rural Development - Department of Land Resources

- Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) amalgamated Accelerated Irrigation Benefit Programme (AIBP), River Development & Ganga Rejuvenation (MoWR, RD & GR), Integrated Watershed Management Programme (IWMP) of Department of Land Resources (DoLR) and the On Farm Water Management (OFWM) schemes.

### 2. State level - Nodal Agency

- The state level Nodal Agency is the implementing authority to implement and plan the activities in the state with relevant departments in the ministry.

### 3. District level - Watershed cell-cum-data centre

- At district level, watershed cell-cum-data centre supervises and coordinates the integrated watershed management programs projects, set up in District Rural Development Agencies DRDA/Zilla Parishad of the state governments.

### 4. Project level - Project Implementing Agency

- Project implementation is supervised by the Project Implementing Agency as per the Common Guidelines for Watershed Projects - 2008 (revised in 2011).

### 5. Watershed Development Team

- Panchayats, Government and NGOs function as project implementing agencies by constituting a Watershed Development Team (WDT) comprising of technical experts.

### 6. Village Level - Watershed Committee

- The Watershed Committee is constituted by the Gram Sabha to implement the project at field level. This Watershed Committee consists of at least 10 members, comprising the members representing Self-Help Groups, User Groups, SC/STs, Women and the Landless, plus one member from Watershed Development Team.

## Funding of IWMP for the watershed programs in the past years

Year	No. of Projects Sanctioned	Area Covered (in million hectares)	Funds Released (Rs. In Crores)
2009 - 10	1324	6.310	501.48
2010 - 11	1865	8.824	1496.83
2011 - 12	1898	9.080	1865.92
2012 - 13	1066	5.000	2720.54
2013 - 14	1051	5.046	2162.80
2014 - 15	1010	4.809	2099.45
<b>Total</b>	<b>8214</b>	<b>39.069</b>	<b>10847.02</b>

Source: Government of India (2015) Annual Report -2014-15, Ministry of Rural Development

# Approach of EdelGive Foundation in Watershed programs

## 1. Collective participatory approach

The watershed management programs of the EdelGive Foundation are based on a collective participatory approach involving the local community and people. This involves active community participation and collective action from the local community, local non-government organisations, governments, corporates and research institutions, and draws on extensive hydrology, engineering, agronomics, natural resource management, forestry and social sciences expertise in developing the watershed programs.

## 2. Bottom-up approach

In the early days of watershed management programs, most of the water programs were mainly 'agency-driven' or 'supply-driven' rather than 'demand-driven' i.e. implementing agencies developed and implemented water-shed projects with no active participation or contribution from the community. However, this failed to achieve even the most basic goals of the projects. On the other hand, the 'bottom-up' approach makes sure that watershed interventions are planned, designed, implemented and monitored by the local community.

## 3. Integrated approach

Watershed projects must make conscious efforts to recognise the stakes and interests of small- and large-scale farmers, women and landless labourers at every level, from decision-making to implementation to project-monitoring. Watershed management programs may not yield the desired results if the integrated and collective approach is ignored, which entails the following risks:

- Unequal distribution of benefits of watershed programs to vulnerable groups.
- Water projects are abandoned or inadequately maintained after construction.
- Absence of community ownership, participation, contribution (in terms of labour or resources), and accountability.





## Different types of Watershed Structures supported by EdelGive

	Watershed Development Activity	Benefits	Cost INR (per unit)
1	Farm pond	<ul style="list-style-type: none"> <li>• Surface water conservation</li> <li>• Adaptation to unreliable rainfall</li> <li>• Reduction in drudgery of women</li> </ul>	1,00,000
2	Khadin development	<ul style="list-style-type: none"> <li>• Surface water conservation</li> <li>• Increase in food production and reduction in migration</li> <li>• Increase in household income</li> </ul>	40,000
3	Horticulture & Plantations establishment	<ul style="list-style-type: none"> <li>• Increasing vegetation and forest cover</li> <li>• Increase in household income</li> <li>• Reduction in migration</li> <li>• Increase in agricultural produce</li> </ul>	30,000
4	De-silting of Nadi/pond	<ul style="list-style-type: none"> <li>• Increase in water availability</li> <li>• Increasingly hygienic living conditions</li> <li>• Improvement in groundwater levels</li> <li>• Improved girl child education</li> <li>• Reduction in drudgery of women</li> </ul>	2,25,000 – 4,00,000
5	Building capacity of CBOs, NGOs and local community	<ul style="list-style-type: none"> <li>• Enhanced understanding of judicious use of water</li> <li>• Increased sense of ownership of water</li> <li>• Livelihood options development for women</li> </ul>	50,000
6	Gabian structure	<ul style="list-style-type: none"> <li>• Improvement in groundwater levels</li> <li>• Increase in household income</li> </ul>	50,000
7	Cement Check dam	<ul style="list-style-type: none"> <li>• Water available throughout the year</li> <li>• Tanker-free villages</li> <li>• Increase in household income</li> <li>• Increase in food production and reduction in migration</li> <li>• Reduction in drudgery of women</li> </ul>	2,00,000 – 19,00,000
8	Well repair and deepening	<ul style="list-style-type: none"> <li>• Reduction in drudgery of women</li> <li>• Farmers start taking Rabi crops</li> <li>• Farmers start multi-cropping pattern</li> </ul>	1,00,000
9	Renovation and repair of existing check dams	<ul style="list-style-type: none"> <li>• Yield improvement and increase in production</li> <li>• Crop quality improvement, leading to greater return for the production</li> </ul>	1,50,000
10	Cleaning and rejuvenating the existing nala/canal	<ul style="list-style-type: none"> <li>• Water available throughout the year</li> <li>• Improvement in groundwater levels</li> <li>• Increase in household income</li> </ul>	40,000 – 1,50,000

	from forest dam to the fields/farm areas	<ul style="list-style-type: none"> <li>• Increase in food production and reduction in migration</li> </ul>	
11	Excavation for Main nali/canal construction from existing canal to new	<ul style="list-style-type: none"> <li>• Farmers start taking Rabi crops</li> <li>• Farmers start practicing multi cropping pattern</li> </ul>	45,000 – 1,40,000
12	Groundwater resource estimation for future projection & planning for livelihood promotion	<ul style="list-style-type: none"> <li>• Farmers start taking Rabi crops</li> <li>• Farmers start practicing multi cropping pattern that helps soil fertilization</li> </ul>	30,000
13	SRI promotion	<ul style="list-style-type: none"> <li>• Promotion of modern agriculture practices</li> <li>• Low input and low water consumption for cultivation</li> </ul>	45,000
14	Formation of farmers' cluster and exposure visits for farmers	<ul style="list-style-type: none"> <li>• Farmers start taking Rabi crops</li> <li>• Farmers start practicing multi-cropping pattern that helps soil fertilization</li> </ul>	60,000
15	Drip and sprinkler irrigation	<ul style="list-style-type: none"> <li>• Increase waste land area under cultivation</li> <li>• Farmers start practicing multi cropping pattern that helps soil fertilization</li> </ul>	40,000
16	Earthen check dams	<ul style="list-style-type: none"> <li>• Increase in annual income of villagers on the back of improved agriculture production due to availability of water storage structures</li> <li>• Increase in availability of drinking water sources</li> </ul>	2,25,000 – 13,00,000
17	Loose boulder structures	<ul style="list-style-type: none"> <li>• Effective structure to store water during the rainy season to be used for irrigation in the post-monsoon period</li> <li>• Provision of protective irrigation resulting in an increase in crop</li> </ul>	10,000
18	Shirpur / Dove	<ul style="list-style-type: none"> <li>• Increase in irrigation facility</li> <li>• Wells and bore wells get recharged</li> </ul>	300000 - 750000
19	Budki Model	<ul style="list-style-type: none"> <li>• Provision of water for animals and humans in summer</li> <li>• Improvement in groundwater levels</li> </ul>	75000 - 140000
20	Dug well recharge, repairing and Bore well recharge	<ul style="list-style-type: none"> <li>• Villages benefit from greener fodder and greater moisture content in soil</li> <li>• Increase in groundwater levels</li> </ul>	35000 - 85000



		<ul style="list-style-type: none"> <li>• Green fodder availability for live stock</li> </ul>	
<b>21</b>	Vanrai Bandhara	<ul style="list-style-type: none"> <li>• Groundwater level and soil moisture in the area is increased</li> <li>• Increase in green fodder availability for livestock</li> </ul>	6000 - 9000
<b>22</b>	Diversion Based Irrigation Project (PHAD Irrigation)	<ul style="list-style-type: none"> <li>• More land brought under protective irrigation</li> <li>• Increase in groundwater level and soil moisture in the area</li> <li>• Increase in green fodder availability for livestock</li> <li>• Crop quality improvement, leading to greater return for the production</li> <li>• Water user groups develop and manage the distribution of water</li> </ul>	2,50,000

# Why Invest in Watershed Management Programs

## *kNOw Water kNOw Life*

### **1. Water harvesting, security and conservation**

In water-scarce regions, systematically harvesting, securing and conserving water is the only way to ensure its availability for irrigation, drinking and other domestic purposes. Most watershed programs supported by the EdelGive Foundation follow the principle that water structures should harvest rain water to elevate underground water tables, rather than collect water at surface level in check dams. Moreover, with the increase in groundwater tables, the moisture content of the soil also increases, which enables higher agricultural yields. At present, rural areas are highly dependent on groundwater drawn through tube wells or water tankers for irrigation and domestic purposes. However, these practices can be highly unsustainable and expensive, and they deplete groundwater levels much faster than they can be replenished.

### **2. Empowerment of women and vulnerable groups**

Women's empowerment is a process through which women in a society gain the power of decision-making and a greater share in control over material, human, information, and financial resources. In India, women are usually responsible for drawing water and preserving it in the household for domestic purposes. They often travel long distances and expend considerable time and energy in the quest of securing water. The programs supported by the EdelGive Foundation are gender-sensitive and aim at empowering women. Thanks to these watershed management programs, women now spend less time securing water, and can therefore utilise the extra time for education, recreation or other creative purposes. The EdelGive Foundation ensures that the benefits of watershed program reach women, and sees to it that they are represented in all the decision-making and monitoring forums and committees.

### **3. Livelihood generation and poverty alleviation**

Much of India's rural population remains dependent on a rain-fed agricultural economy that provides meagre and uncertain income. Their plight is aggravated by degraded soil quality and depleting water resources. Watershed management programs are primarily aimed at the development and improvement of poor rural household income levels. These programs have helped millions of farmers improve their income and quality of life. The programs ensure that farmers secure two to three crops a year, thereby enhancing the income of each household while helping them reverse the process of forced migration from villages to cities. In this way, watershed programs bring micro- and macro-economic changes to households that are dependent on rain-fed agriculture.

#### **4. Agricultural development and food security**

The watershed management programs supported by EdelGive aim to restore and maintain traditionally tested and ecologically sustainable agro-farming practices. This particular approach helps in generating more livelihood opportunities through improvements in crop production and conservation of soil health. In addition to construction of watershed structures and training and capacity building programs, farmers are also supported with supplementary programs like promotion of less water-intensive crops, multiple crop plantation in the same field, crop rotation, crop plantation according to rainfall patterns, seed storage or development of seed banks after harvest, tree plantation alongside agricultural fields, and water structure construction at required locations. Beyond this, the loosening of hard land areas helps in the penetration of water, so that the roots of crops and plants may easily penetrate after tilling. EdelGive's water programs not only secure water, but also conserve fertile soil, since soil lost through erosion cannot be restored. In summation, our watershed programs balance water and soil conservation.

#### **5. Ecological conservation**

The primary aim of EdelGive's watershed management programs is the conservation of the ecosystem and natural resources, and the reversal of the process of climate change and global warming. Ecological conservation is at the heart of watershed programs, as they address the root causes of water scarcity and soil degradation. The supplementary projects of watershed program are forestation programs, horticulture units, drip irrigation methods and plantations which ensure the sustainability of water programs. Watershed programs should not be seen in isolation as a practice that merely harnesses agricultural yields, conserves rainwater or generate livelihoods, but as a holistic process to develop the systems and practices that enable future generations to enjoy nature in its glorious abundance.

# Stakeholders and Partners in Watershed Projects

*Coming together is a beginning; keeping together is progress;  
working together is success*

Partnerships between corporates, governments, foundations and donors have delivered tremendous results in the fields education, microfinance and health.

Water and soil conservation is a relatively unexplored sector, but the collaboration of corporates, governments, foundations and donors could likewise have a great impact here.

## Corporate Social Responsibility

The activities accepted as CSR by the Indian Companies Act 2013 include the provision of safe drinking water; livelihood enhancement and environmental sustainability, ecological balance, animal welfare, agro-forestry, conservation of natural resources and preservation of

## Government

The Government of India has accorded high priority to water conservation and its management, for which Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) has been formulated with the vision of extending the coverage of irrigation and improving water use efficiency 'More crop per drop' is a focused program

## Water and Soil Conservation Projects Partnerships

### Foundations and Trusts

Many Foundations and Trusts are recognising the importance of development of rural communities through scalable, sustainable and replicable projects, and there growing awareness among these organisations that water projects for enhancing rural livelihoods can deliver a real impact on the ground.

### Donors and Funders

There is a growing awareness among donors and funders about supporting projects that provide greater impact through community participation. This realisation has led them to explore unique social projects that are impactful and scalable; such as watershed management projects.

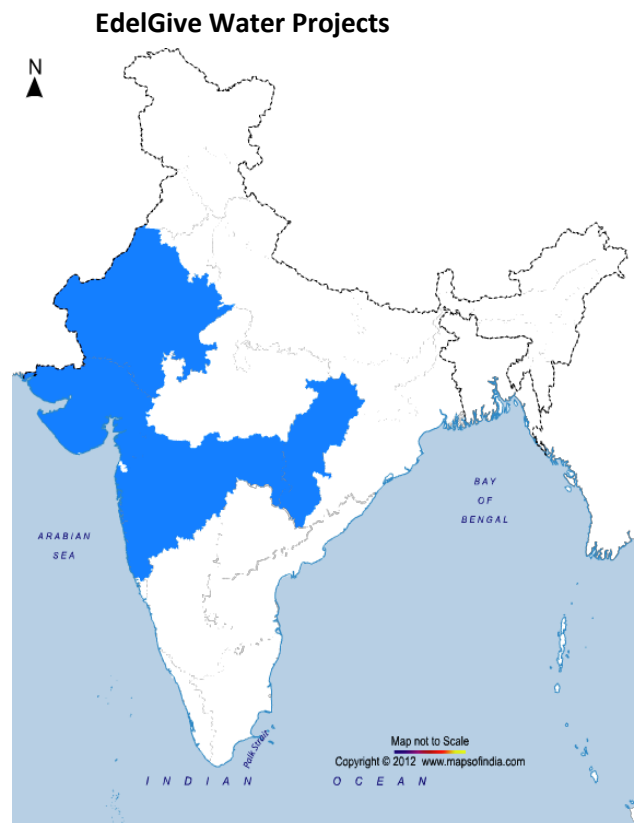
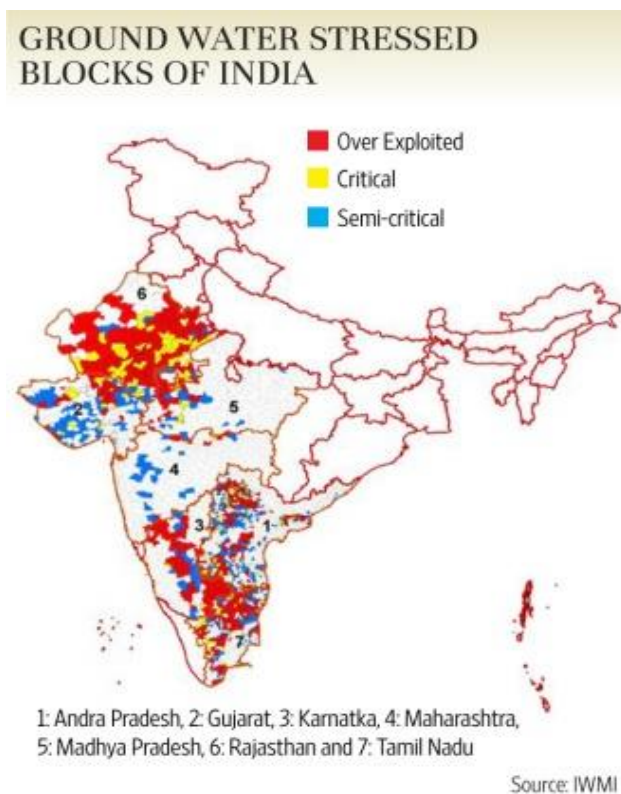
**2025**

## **EdelGive's Goals and Aspirations for Watershed Program**

By 2025, in association with the like-minded partners like corporates, Governments, Foundations, Corporates and Donors, EdelGive Foundation expects to:

- Impact 1 million rural lives
- Provide Rs. 500 million in grant funding
- Convert 1 lakh acres of land into water secure
- Train 1 lakh farmers for sustainable agricultural practices
- Enhance income levels of 1 lakh beneficiaries
- Support 20 non-profit organisations on water projects
- Publish 10 research reports and case studies of best practices

**Impact  
1 million  
Rural lives**



## Activities Related to Organisation of Education, Health and Nutrition (AROEHAN)

Maharashtra



**Founded: 2006**

**Founder: Anjali Kanitkar**

**Head: Shraddha Shringarpure**

Activities Related to Organisation of Education, Health and Nutrition (AROEHAN) focusses on the holistic development of tribal communities by working on the issues of health, education, livelihood and effective governance in the Mokhada area of Thane district of Maharashtra. AROEHAN works in regions with a peculiar terrain for rainwater harvesting, such as high run offs due to extremely high rainfall. The undulating and rocky terrain allows little scope for water percolation. Hence, groundwater reserves are almost empty, and women spend hours walking to fetch their daily requirement of two pots of water. Water-procurement becomes the most important and time-consuming daily chore. Water from the wells is also unhygienic, leading to water-borne epidemics. The Mokhada region has also been notorious for malnutrition deaths. The majority of the population is dependent on agriculture as their main source of income. Hence, increasing agricultural income is essential to improving families' economic status. Similarly, there are many landless households with seasonal migration, so securing an income for these households through other livelihood options becomes imperative, in order to reduce migration and mitigate its effects on women and children.

### EdelGive Support

- **Locations:** Nashera, Shirasgaon, Adoshi villages of Maharashtra
- **Watershed Development Funding:** Rs. 2 Crores (2010 – 2016, of which Rs. 52 lakh is for watershed projects from 2011 – 2016)
- **Geography:** Water-scarce region
- **Main Approach:** Check Dams, Drip Irrigation, Building capacity of CBOs, NGOs and local people

### EdelGive Foundation Supported Watershed interventions implemented by AROEHAN

- Building of watershed structures like River bunds, Sub-surface bunds, Cordons, Check dams etc. to increase the groundwater table and moisture content in the soil.
- Organising exposure visits for farmer groups to explore new livelihood options and share agricultural knowhow.
- Area treatment from Natural Resource Management perspective (Tree Plantation, Farm Ponds, Trenches etc)
- Increasing groundwater through sub-surface bunds resulting in water retention in wells
- Connecting farmer groups to markets to facilitate marketing of their products, and working to link farmers with formal banking services.

**Partners of AROEHAN:** R. Jhunjhunwala Foundation, Siemens' Ltd., Oxfam Foundation, Save the Children, Concern India, BPCL, Tata Motors, All Cargo Logistics, Narottam Seksaria Foundation, Bay Diligence, Rotary and Lions Clubs et al.

**Founded: 1967**

**Head: Mr. D K Manavalan and Dr. S. Srivastava**

AFPRO was established in 1966 as a secular Indian technical service organization. It was registered (registration No.3516) in 1967 under the Societies Registration Act XXI of 1860. AFPRO endeavors to bring together resources of overseas funding agencies, government agencies, financial institutions and grassroots level NGOs for implementation of developmental projects to improve the quality of life of weaker sections of the rural community. AFPRO works with and in support of the Government of India, and for people without regard for caste, creed, race, religion or nationality. AFPRO reaches out to poor and marginalized communities throughout India, particularly small and marginal farmers and landless tribals by providing and developing livelihoods through proper natural resource management. AFPRO works with communities to develop low-cost options for water and sanitation, food security and rural livelihoods. EdelGive Foundation supports its water projects in Chhattisgarh.

#### **Context of the Region for water projects**

- About 70% of the state's population is rural with the main livelihood being agriculture and agriculture-based activities and over 70% belong to the small and marginal farmer category
- It is largely a rain-fed mono-crop belt and less than a quarter of the area is double-cropped
- A majority of farmers practice traditional methods, resulting in low growth and productivity

#### **Major Recognitions of AFPRO**

- AFPRO is empanelled in the Advisory Board for framing the policies and guidelines for implementation of the National Water Mission under the Ministry of Water Resources
- AFPRO is a member of Drafting Committee for the National Water Policy

#### **EdelGive Support**

- **Locations:** Kosmi, Tengna, Barpara, Nahanda and Kaparmeta villages of Chhattisgarh
- **Watershed Development Funding:** Rs. 1.6 Crore (2016 – 2019)
- **Geography:** water scarce region
- **Main Approach:** farm ponds, excavation of canals, check dams, ground water resource estimation for livelihood promotion, formation of farmer groups, exposure visit of farmers.

#### **EdelGive Foundation Supported Watershed interventions implemented by AFPRO**

- Construction of Check dams, Stop dams, Dug wells, Farm ponds, Canals, Boulder checks, and Gully plugs, CCTs, Water diversion structures, Earthen dams in different watershed projects.
- Exposure visit of farmers to sensitize & awareness for improved agricultural practices
- Education around rainwater harvesting measures, water management, agricultural practices, formation of farmer groups and other interventions to streamline livelihood promotion.

**Partners of AFPRO:** Sterlite Technologies, Ultratech, UNICEF, Lafarge India Pvt. Limited, HDFC, Canadian International Development Agency, International Fund for Agricultural Development, NABARD, Sir Ratan Tata Trust, Indian Council of Agricultural Research, Council for Advancement of Peoples Action and Rural Technology and many others.

## Dilasa Janvikas Pratishthan

Maharashtra



**Founded: 1991**

**Founder: Sanjeev Unhale**

Dilasa Janvikas Pratishthan works in the villages of Maharashtra to improve the condition of water, soil and vegetation along with empowerment of women. Dilasa is a Resource Support Organization of NABARD in Marathwada under the Indo-German Watershed Development Programme and in Vidarbha under NABARD's Holistic Watershed Development Programme. Dilasa has implemented aquifer management projects in Aurangabad, which is recognized as a landmark concept in watershed management. Watershed treatments executed include - Farm bunding, Agro Horticulture, Stone outlets, Grass seeding, Dry land horticulture, Afforestation works - Continuous Contour Trenches, Earthen Gully Plugs, Drainage Line Treatment, Earthen Nalla Bund, Cement Nalla Bund, Louse Boulder Structures, Gabions, Women empowerment, training & demonstration, etc.

### **Context of the Region for water projects**

- The regions in which Dilasa works falls in high priority zone as earmarked by the Central Government, due to recurring acute shortage of water, food and fodder
- The area receives rainfall with varying intensity for a few days, hence farmers are unable to plan agricultural activities, resulting in poor productivity or crop failures
- The region witnesses persistent drought
- Due to rain fed farming and uncertainties in prices of agricultural produce, farmers face heavy indebtedness and severe poverty

### **EdelGive Support**

- **Locations:** Jalkotwadi, Manmodi and Aliyabad watersheds in Marathwada region of Maharashtra
- **Watershed Development Funding:** Rs. 35 Lakh (2016)
- **Geography:** Drought prone region
- **Main Approach:** Earthen nala bunds, loose boulder structures,

### **EdelGive Foundation Supported Watershed interventions implemented by Dilasa Janvikas Pratishthan**

- Developing natural resources through construction of water storage structure to mitigate the drought situation.
- Improving the standard of living of farmers through increased income, sustainable livelihood options for poor, landless and marginal farmers.
- Recharging ground water through systematic soil & water conservation measures and water harvesting structures.
- Rejuvenating the river flow through water structure managements.
- Reducing the drudgery of women in fetching potable water.

**Partners of Dilasa Janvikas Pratishthan: NABARD, World Bank, Unicef, KFW-Germany, Mahindra & Mahindra, United Breweries, ACC Cement, DHFL, CAPART, Johnson & Johnson, Rural development department of Central & State of Maharashtra and many others.**



## Gramin Vikas Vigyan Samiti (GRAVIS)

Rajasthan



**Founded: 1983**

**Founders: L. C. and Shashi Tyagi**

**Head: Dr. Prakash Tyagi**

**Gramin Vikas Vigyan Samiti (GRAVIS)** works in the Thar Desert region of Rajasthan and in Uttarakhand. The Thar Desert spans over 120,000 square miles, covering the majority of the state of Rajasthan, and is home to 23 million people, making it the most densely populated desert in the world. The driest parts experience less than 100 mm of rainfall annually. The fundamental work of Gravis is the mitigation of drought through watershed programs in the Thar Desert region. Gravis derives its core principles from Gandhian philosophy of Gram Swaraj, which is village self-rule and self-sufficiency. Over the last three decades, GRAVIS has done commendable work in developing watershed models across many villages of Rajasthan.

### **Context of the Region for water projects**

Annual rainfall varies from 100 to 300 mm and its distribution is erratic, primarily occurring between July and September. The region's average temperature ranges from 24 to 48°C in the summer to 4 to 10°C in winter. Due to low rates of precipitation and high temperatures, the region is ridden with drought and water insecurity. The region has also been experiencing rapid desertification due to natural and man-made factors, namely, a combination of aridity and erosion with unsustainable agricultural practices, overexploitation of natural resources and the use of pesticides and fertilizers.

### **EdelGive Support**

- **Locations:** Dujasar, Kahalaa, Khabia, Jajiya, Meghwalon ki Dhani, Harlaya, Indon ki Dhani, Bher Bhakhri, Shiv Nagar, Padashla villages of Rajasthan
- **Watershed Development Funding:** Rs. 97 Lakh (2015 - 2018)
- **Geography:** Desert / Water scarce region
- **Main Approach:** Farm pond, Khadin development, Horticulture & Plantations establishment, De-silting of Naadi, Building capacity of CBOs, NGOs and local people.

### **EdelGive Foundation Supported Watershed interventions implemented by GRAVIS**

- The water and food security interventions include watershed structures like khadins and naadis. Desilting of naadi are low-cost, technically sound and sustainable.
- Developing and strengthening community based organizations in the form of Village Development Councils and Self Help Groups.
- Building networks of representatives from the beneficiary community who participate at every stage of the process, from planning to monitoring

**Partners of GRAVIS:** Canadian International Development Agency, Central Social Welfare Board, Government of India, Dalyan Foundation, United Nations Development Programme, World Health Organization, Wells for India, International Center for Agricultural Research in Dry Areas and many others.



## UGAM Gramin Vikas Sanstha

Maharashtra

**Founded: 1996**

**Founder: Jayaji Paikrao**

Ugam Gramin Vikas Sanstha works for empowering the most vulnerable sections of the communities in the Marathwada region of Maharashtra. Ugam believes that the path towards sustainable development and overcoming economic deprivation is through enhancing livelihood capabilities of the poor and empowering them through knowledge and skills. Ugam is actively involved in promotion of environmental and agriculture sustainability through 'Natural Resource Management'. Ugam follows an 'Integrated Rural Development' approach of working collaboratively on issues of women, children and youth; creating awareness among the villagers and imparting knowledge and skills.

### Context of the Region

The area is characterised by drought which largely impacts agricultural activity causing the young to migrate under distress to cities for employment, leaving behind the old and women in a crisis-like situation, arising out of non-availability of employment opportunities and loss of land. Due to irregularity of rainfall and low water tables, farmers are unable to cultivate Kharif and Rabbi Crops. Percentage yields have dropped significantly, and frequent borrowing from moneylenders, crop failures, and low market price of farm produce has further burdened farmers causing a spate of suicides in the region.

### EdelGive Support

- **Locations:** Telangwadi, Nimtok, Amdari, Rajdari villages of Maharashtra
- **Watershed Development Funding:** 1.05 Crores (2015 - 2018)
- **Geography:** Drought hit and water scarce region
- **Main Approach:** Shirpur / Dove, Budki Model, Dug well recharge, repairing and Bore well recharge, Vanrai Bandhara, Check Dams, Farm Ponds etc.

### EdelGive Foundation Supported Watershed interventions implemented by UGAM

- To conserve and harvest water - various models of watershed structures, e.g. Shirpur / Dove model, Farm ponds, Budki Models, Cement Nala Bandhs, Vanrai Bandharas etc.
- Developing water shed project through 'Ridge to Valley' approach (treating the land from a higher elevation and gradually lands of lower elevations are treated).
- Planning of natural resource management through people participation, by involving all stakeholders in planning execution and monitoring.
- Generating livelihood resources for farmers, landless labour, women and youth through long-term self employment planning.

**Partners of Ugam:** Terre Des Hommes, Japan Consulate, Habitat for Humanity India, Finnish Society, Institute for Integrated Rural Development, Indian Institute of Science Education and Research and many others.

**Founded: 1981**

**Founders: Padma Chowgule, Indu Mishra, Penelope Lane Czarra and Nafisa Barot**

Utthan works in the tribal belts and coastal regions of Gujarat among the economically poor and socially excluded populations, with extremely low health status of women, low education, and high levels of migration for employment. Its major thrust areas have been: access to safe water and sanitation as a basic human right; integrating perspective of gender equality and women's empowerment; conflict prevention through conflict transformation, peace and justice; and Livelihood security through protection, conservation and augmentation of natural resources.

### **Context of the Region**

The geographical situation in the areas in which Utthan operates is such that all the rainwater is carried away into the catchment area of two dams situated in this area. Due to the lack of any major river, water cannot be conserved easily in this area. Also the area being on a slope causes soil erosion resulting in reduction of forest cover. Agriculture is rain-fed and therefore there is a high element of risk. Many of the families migrate to enhance their incomes to urban centres in the district, to other regions of Gujarat and even outside the state.

### **EdelGive Support**

- **Locations:** Bhamari village of Gujarat
- **Watershed Development Funding:** Rs. 46 Lakh (2015 - 2017)
- **Geography:** Drought hit and water scarce region
- **Main Approach:** Organising communities and women and enhancing their capacities, their exposures to other farmers groups having best practices, facilitating building of Check dams, Farm bunds, Gabian structures, Drip Irrigation, Well deepening, etc.

### **EdelGive Foundation Supported Watershed interventions implemented by Utthan**

- Conserving soil and water by using community centred gender sensitive approach and 'ridge to valley' concept in order to reduce soil loss and maximize harvesting of water and retain soil moisture.
- Increase cropping intensity of agriculture land by converting waste land and from a single crop to double cropping farm land therefore addressing the issues of poverty, migration, food security, education etc.
- Utilization of land according to its capacity for realizing its production potential on a sustainable basis.
- Create awareness among the people about the nature and seriousness of the problem and the action possible for regeneration of natural resources, environment protection and of improved best agriculture and water conservation practices.

**Partners of Utthan: India WASH Forum, NABARD, Indo-German Watershed Development Program, Water and Sanitation Management Organisation-Swajaldhara Rashtriya Shram Vikas Yojna, Gender Water Alliance, Global Water Partnership, South Asia Consortium for Interdisciplinary Waters, Water and Environmental Sanitation Network, Pravah and many others.**

## Yuva Rural Association

Maharashtra



**Founded: 2002**

**Founder: Dattatray Shankar Patil**

Yuva Rural Association (YRA) works to address the rural issues in Western India with its core existence in the Vidarbha region of Maharashtra where YUVA had initiated development interventions through a network called Vidarbha Lokvikas Manch. At present, YRA works in Natural Resource Management, Livelihoods, Gender and Governance. YRA works in comparatively backward regions of Maharashtra which faces numerous problems including farmer's suicides, lack of irrigation facilities, lack of proper health and education services.

### **Context of the Region**

A majority of the population in the Vidharbha region is employed in agriculture. Yet, 78% of the land is cultivated under rain-fed conditions. Vidharbha accounts for the maximum number of farmers' suicides. The problems are compounded due to low crop yield and only oncrop per year due to lack of irrigation. Crop failures are rampant due to dry spells and erratic rainfall. Farmers face infrastructural and financial bottlenecks such as storage facilities and bank credit. Farmers have higher input costs with single cropping and the risk of total crop failure. The lack of scientific soil management has led to erosion of the fertile top-soil and reduction in crop productivity. The situation of small and marginal farmers in this context is extremely serious.

### **EdelGive Support**

- **Locations:** Bhandarbodi, Wadamba, Mahadula, Panchala, Shivani villages of Maharashtra
- **Watershed Development Funding:** Rs. 51 Lakh (2016 - 2018)
- **Geography:** Drought hit and water scarce region
- **Main Approach:** PHAD structures, Drip Irrigation, Formation of farmers' groups, exposure visit of farmers etc.

### **EdelGive Foundation Supported Watershed interventions implemented by Yuva Rural Association**

- Enhancing ground water level and soil moisture. Diversion based irrigation, locally called 'Phad Irrigation Model' is very economical and an environment friendly method of irrigation (as it doesn't require power for lifting water and is affordable to poor farmers)
- Securing first season crops and preparing for second and third yields of crops, thereby increasing financial security
- Increasing water availability, whereby farmers start practicing multi cropping pattern.
- Farmers are trained in techniques of sustainable agriculture and other agriculture-allied interventions for greater agriculture outputs
- Water user groups developed in the villages for managing and monitoring the distribution and management of water

**Partners of YRA: NABARD, Watershed Support Service and Activities Network, VNCS, AME Foundation, Tribal Development Department, SRTT, Maharashtra State Bio- Diversity Board, Swiss Aid India, Women and Child Development department. United Nations Development Programme, UNICEF, NABARD, Watershed Support Service and Activities Network, Swiss Aid India, NACO and many others.**



## Glimpses

### EdelGive Foundation Supported water projects



Construction of watershed structures in Mokhada, Maharashtra – AROEHAN



Converting desert land into cultivable farms



Villagers participating in Participatory Rural Appraisal





Women participating in water user groups



Edelweiss employees volunteering



Women having to spend hours to collect water



Exposure visits to water shed programs



Site of a watershed project village



Water shed structures site identifications, lay-out and demarcations



People travel long distances to collect water



Community mobilisation



A well running dry



## Annexure I

### Chronology of Government WSD programs and guidelines in India

Year	Program/Policy	Major objectives	Relevant institution
1974	Programme (DPAP)	Promote economic development and mainstreaming drought prone areas through Soil and moisture conservation	MoRD
1978	Desert Development Programme (DDP)	Minimize adverse effects of drought and desertification through reforestation.	MoRD
1990	Integrated Wasteland Development Programme (IWDP)	Regenerate degraded non-forest land through silvipasture and soil and water conservation on the village and micro-watershed scale.	MoRD
1989	Integrated Afforestation and Eco-Development Scheme (IAEPS)	Restore and regenerate the ecological balance of degraded forests on a watershed basis using a participatory approach.	Ministry of Environment & Forests (MoEF) and State Forest Department
1991	National Watershed Development Project for Rainfed Areas (NWDPRA)	Promote sustainable natural resource management, enhance agricultural production, restore the ecological balance, reduce regional disparities, and create sustained employment opportunities in rainfed areas.	Ministry of Agriculture (MoA)
1992	Indo-German Watershed Development Programme	Rehabilitate micro-watersheds for the purpose of regeneration of natural resources and sustainable livelihoods, using a participatory approach.	National Bank for Agriculture and Rural Development (NABARD)
1994	Guidelines for Watershed Development	Provide common guidelines for WSD focused on the watershed scale and having a participatory focus (Represented around a third of the GOI's investment in micro-watersheds and sought to leverage the success of NGOs).	MoRD
2000	Watershed Development Fund	Provide financial support to scale up successful participatory WSD projects in 100 priority districts; promote a more unified strategy to WSD.	MoA and National Bank for Agriculture and Rural Development (NABARD)
2003	Hariyali	Integrate community institutions more	MoRD



	Guidelines	meaningfully in DPP, DPAP, and IWDP and simplify procedures.	
<b>2008</b>	Common Guidelines for Watershed Development (Neeranchal)	Promote a fresh framework to guide all WSD projects in all departments and ministries.	National Rainfed Area Authority (NRAA)
<b>2009</b>	Integrated Watershed Management Programme (IWMP)	Consolidated three programs: IWDP, DPAP, and DPP. Programs adopted a cluster approach focusing on a cluster of micro-watersheds (1000 ha to 5000 ha scale).	MoRD
<b>2015</b>	IWMP will be implemented as the Watershed Component of Prime Minister Krishi Sinchayee Yojana (PMKSY)	PMKSY has been conceived amalgamating ongoing schemes viz. Accelerated Irrigation Benefit Programme (AIBP) of the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD&GR), Integrated Watershed Management Programme (IWMP) of Department of Land Resources (DoLR) and the On Farm Water Management (OFWM) of Department of Agriculture and Cooperation (DAC). The scheme will be implemented by Ministries of Agriculture, Water Resources and Rural Development. Ministry of Rural Development	MoRD

*Source: Planning Commission, 2012*

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