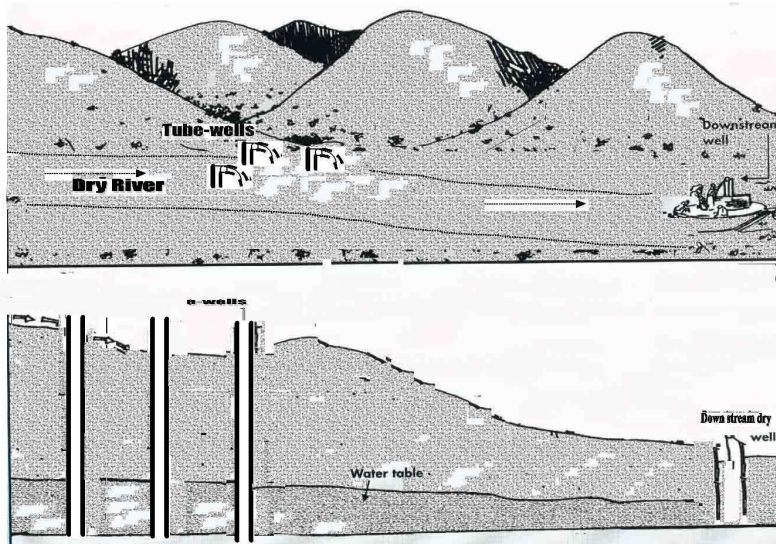
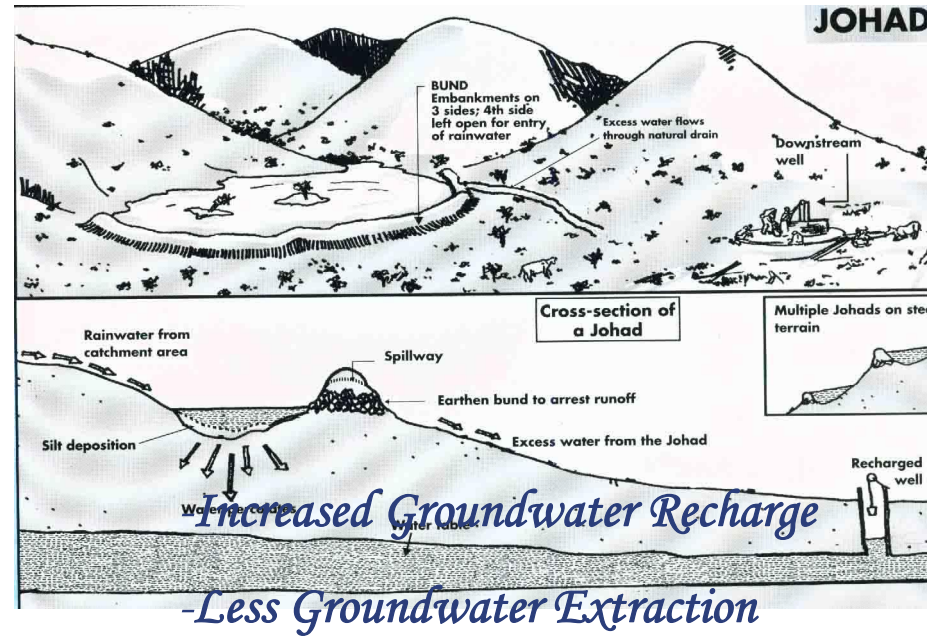


River Goes Dry:



Excess withdrawal of Groundwater

River is flowing:



-Less Groundwater Extraction





1985

*Degraded and barren land
in the catchment areas of Arvari river
& extended drought
had forced people to migrate
out of their villages.*

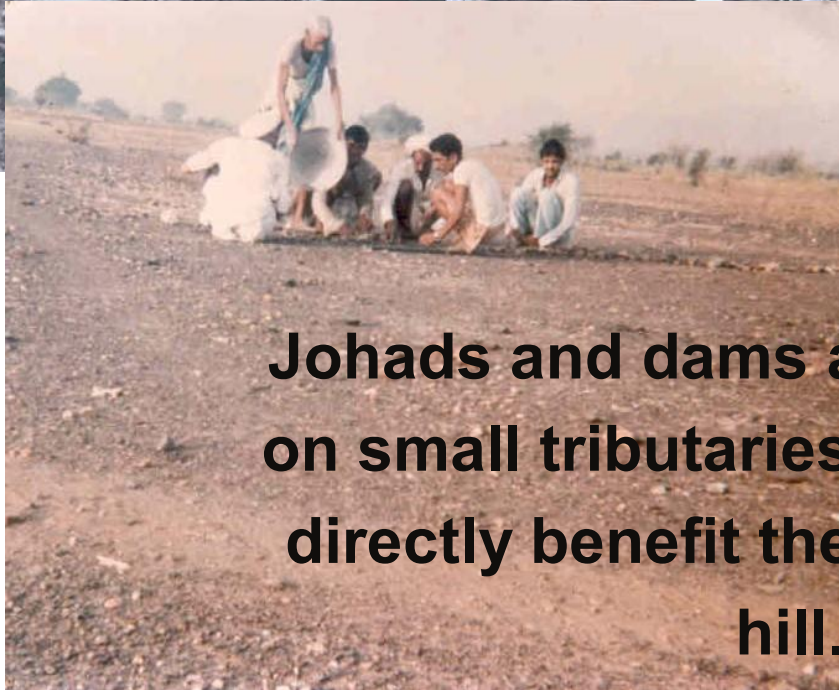
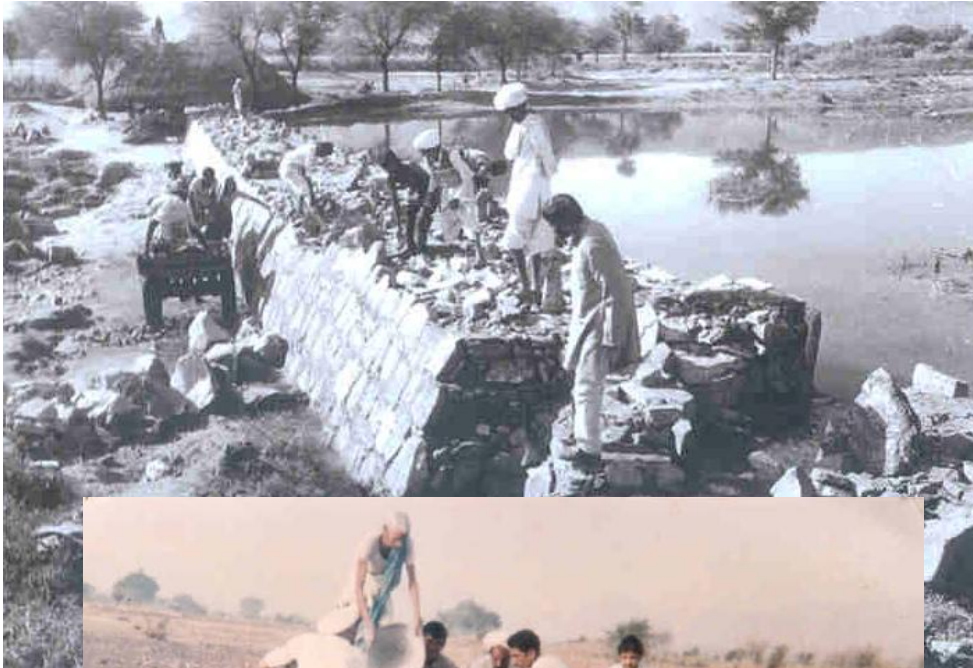


THE SITUATION IN

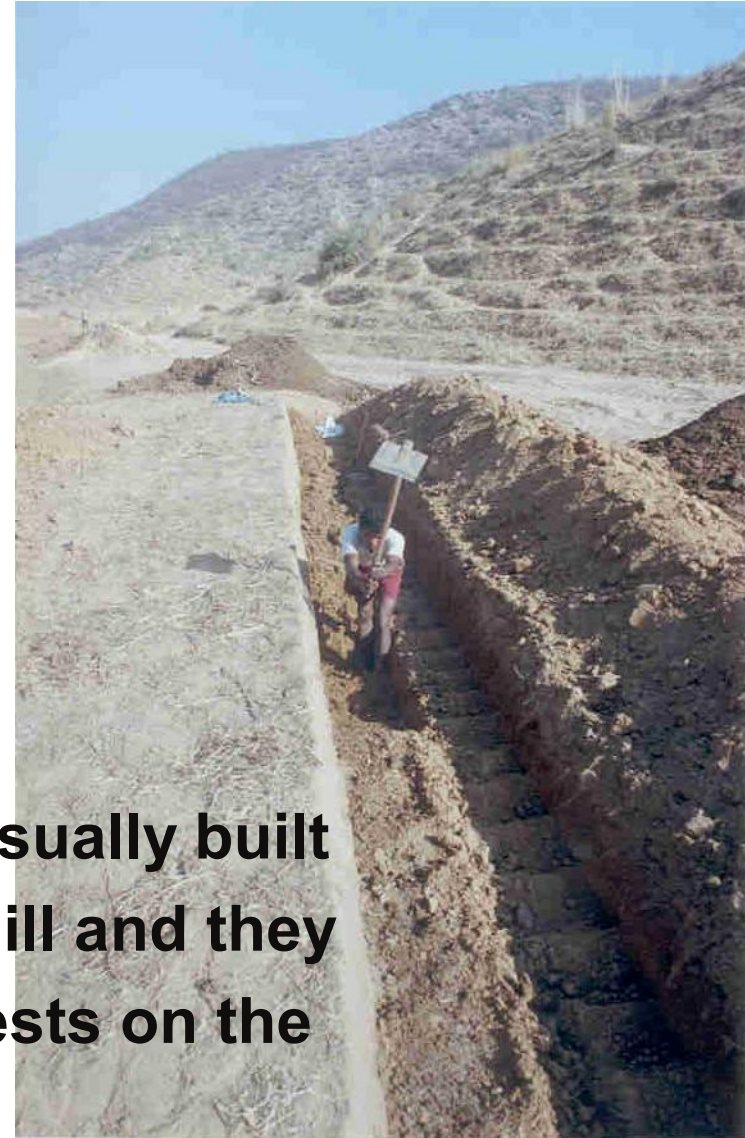
1985



WATER harvesting structures taking shape



Johads and dams are usually built on small tributaries uphill and they directly benefit the forests on the hill.



BRINGING PEOPLE TOGETHER



Success of the first Johad inspired people to take up the building of more such structures – the connection between water and forests was made and this also led to the revival of traditional rules.

In the past, forest ownership had been taken over by the Forest Department, leading to alienation of the people and loss of traditions of conservation – making it difficult to bring people together again.

Types of RWH structures

- **ANICUTS** are built on common land and dam the main reach of the **rivulets**. They are generally made of cement and stone or concrete. These structures have a very large impact on local groundwater tables.
- **BANDHS** are similar to anicuts. They are made up of concrete in the middle, but the outer edges are of earth, and some are entirely made of earth. The main purpose of a bandh is recharge.
- **JOHADS** are small earthen dams shaped like a crescent moon. The main purposes of johads are for livestock drinking and bathing water.
- **TALABS** are deep hole or pond-like structures that has high raised edges on 3 sides made of earth. Monsoon water is collected in the talabs for village use and livestock drinking.
- **MEDHBANDHIS** are constructed in cultivated fields. The lower sides of the fields are raised to retain runoff to increase soil moisture content and retaining moisture for agriculture.
- **TANKAS** are underground structure for collecting rain water for human drinking purpose.



Agricultural farms near a Rainwater harvesting structure : ANICUT



A Rainwater harvesting structure : BANDH



A Rainwater harvesting structure : JOHAD



A Rainwater harvesting structure : MEDHBANDHI



Woman fetching water from a Rainwater harvesting structure : TANKA







.....*Ideas into reality*



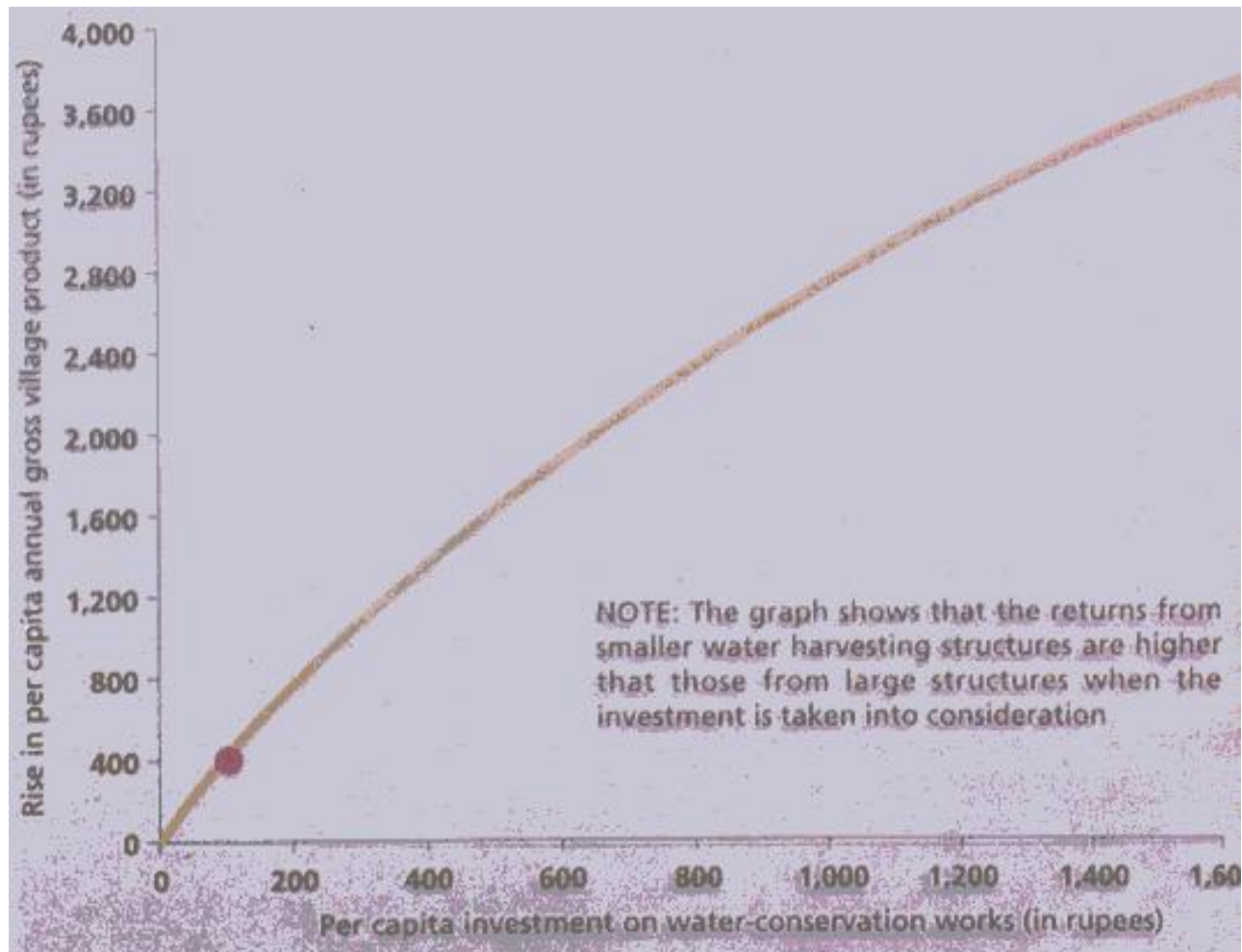
**COMPLETED
STRUCTURES ON
Bhagani BASIN**



BENEFITS

- 1. Sustainable & Reliable water availability for Human beings and livestock**
- 2. Increase in agriculture and milk production ensuring food security**
- 3. Restoration of ecology and bio-diversity in the area as an adaptation to climate change**

SMALL INPUTS : GREAT RETURNS



Increasing investment on small water conservation works brings increasing economic returns.

An investment of Rs.100 per capita on Johad raises the economic production in the village by as much as Rs.400 per capita per annum.

The River Basin Organization Water Demand side management



Rules are framed about issues of water conservation and utilization, and forest conservation.



11 ASPECTS OF The River Basin Org.

1. Framing of rules regarding direct irrigation from the Bhagani river and the wells.
2. Framing of rules regarding crops and cattle feed.
3. Rules to first fulfill local needs with crop production.
4. No sale of water and conservation of fishes in the river.
5. Restriction on the sale of land and the efforts to reduce the need to sell land.
6. Making the whole river area green, ban mining and restrict extended grazing by nomadic grazers.
7. Restrictions on hunting of animals and illegal cutting of trees.
8. Revive traditional methods of water and forest conservation.
9. Prevent over exploitation of water and promote water conservation work.
10. Establish an active system of the management of the river.
11. Define and redefine the role of the village communities.

BLUE *brought* GREEN



BLUE *brought* PROSPERITY



BLUE *brought* HAPPINESS



WATER for food

Impact on irrigation

PARTICULARS	Area Irrigated (hectare)		
	Area irrigated- 1995	Area irrigated 2000	Change
Project Villages	96.61	204.34	+ 107.74
Control Villages	162.11	162.36	+ 0.25

The impact of RWH done by the help of TBS is dramatic. The increase in irrigated area in a TBS-intervention villages is 108 hectares against mere 0.25 hectare in control villages.

More Irrigated Land = More Crop = More Production

Reference: A study on TBS's works in 54 villages undertook by Mr. Bharat Jhunjhunwala, an eminent economist of India.

People's Perception on benefits of RWH

72% of the people testifies a rise in water table

62% said that incomes have gone up

57% said that the area under irrigation has increased

50% perceive an increase in cultivated area, crop production, grass productivity, the number of trees in the vicinity of structures

27% perceive increase in milk yield

WATER for prosperity

CASE STUDY- Village Nimbi

INDICATOR	BEFORE TBS's intervention BEFORE 1998	AFTER TBS's intervention AFTER 2001
Wheat production	5 quintal/beegha	8 quintal/beegha
Income by wheat prod.	Rs 9,00,000/-	Rs 14,40,000/-
Maize production	3 quintal/beegha	5 quintal/beegha
Income by maize prod.	Rs 4,80,000/-	Rs 8,00,000/-
Income by Milk Production	Rs 21,60,000/-	Rs 14,40,000/-
Income by flower production	nill	Rs 3,96,000/-
Rent of land per year	Rs 3000/-	Rs 12,000/-
Total income of village of village per year	Rs 22,40,000/-	Rs 59,96,000/-
Population of village	800	800
Per capita income per year	Rs 2800/-	Rs 7495/-

Due to the increased level of farming and related activities, employment generation has taken place. Laborers from other parts of the country are now hired to work in the fields.

This case study is mirror of the sustainable economic prosperity of many other hundreds of villages , in which TBS had built RWH structures with the active participation of local community, like wise ;Nimbi.

Reference: A study on TBS's works done by students of Indian Institute of Rural Management, Anand in 2002.



Enough water for irrigation from wells²⁷

WATER for nature



Antelope drinking water from a RWH structure built by TBS in Sariska National



The magic of Bhagani river over 12 years

The river had disappeared in
1940s, and was revived in
1997 through the efforts of
Tarun Bharat Sangh



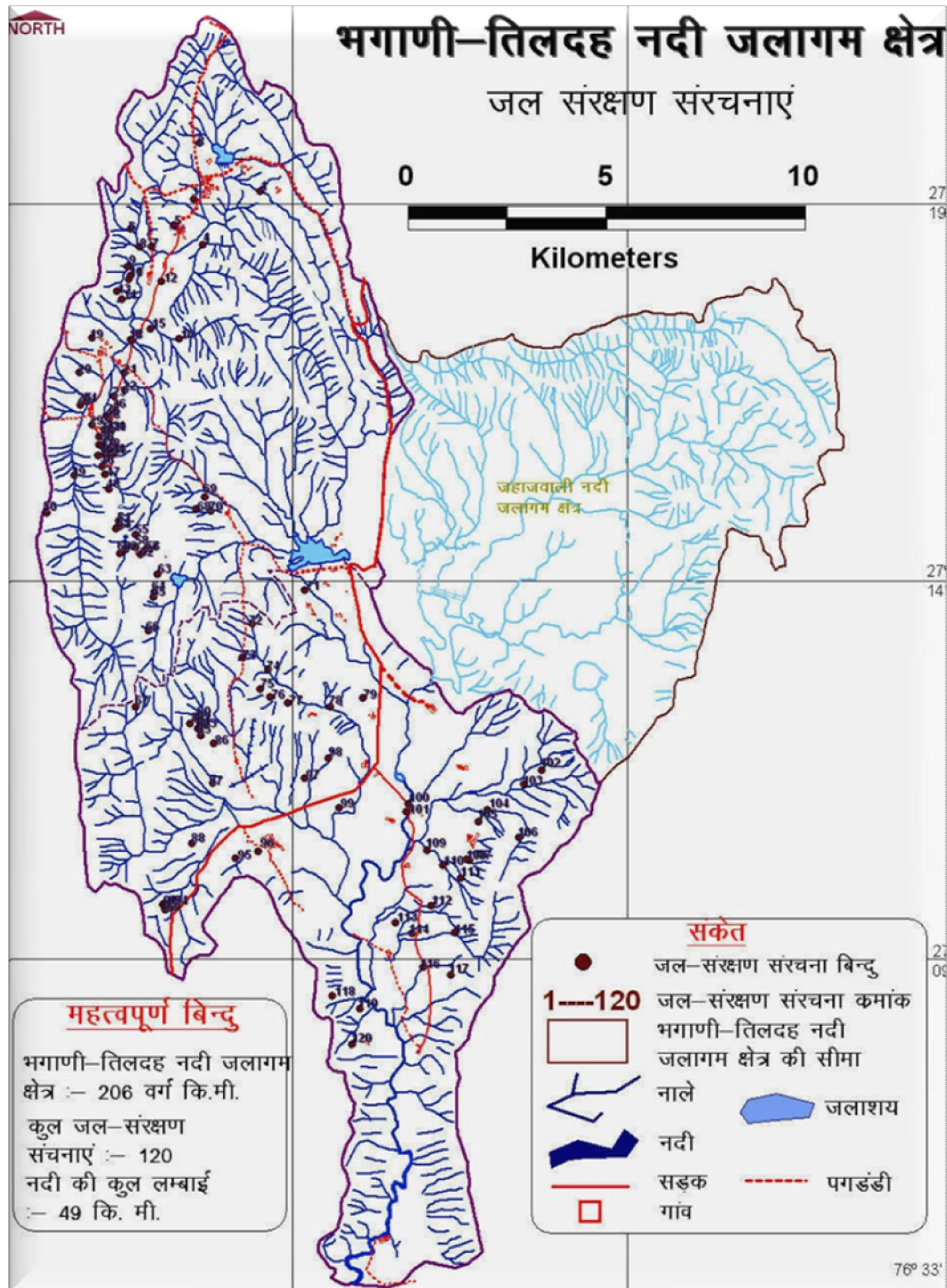
Dark Zone to FLOW

- **The impact of 25 years of tireless effort has turned the Thanagazi block of Alwar from ‘dark zone’ to ‘white zone’.**
- **River based RWH has led to the rejuvenation of dried seasonal rivulets in the area. Now, these rivulets flow for almost 9 to 12 months of the year.**



**Rainwater harvesting done by TBS
falls into the catchment of
five seasonal rivulets:**

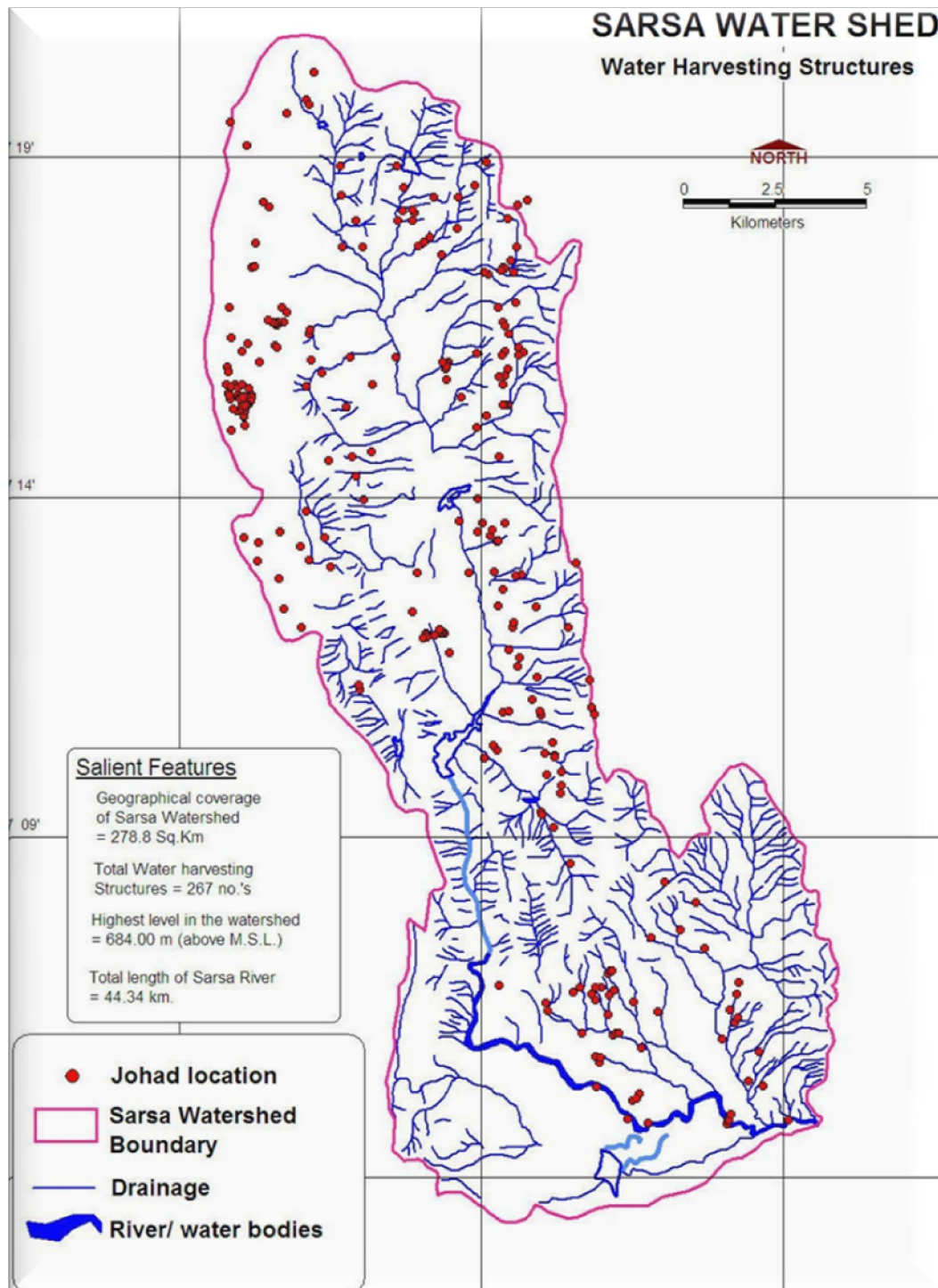
**ARVARI
RUPAREL
BHAGANI-TILDEH
SARSA
JAHAJWALI**



Catchment Area of Rivulet Bhagani-Tildeh

Catchment area: 208 sq. km
Total length of Rivulet: 49 km

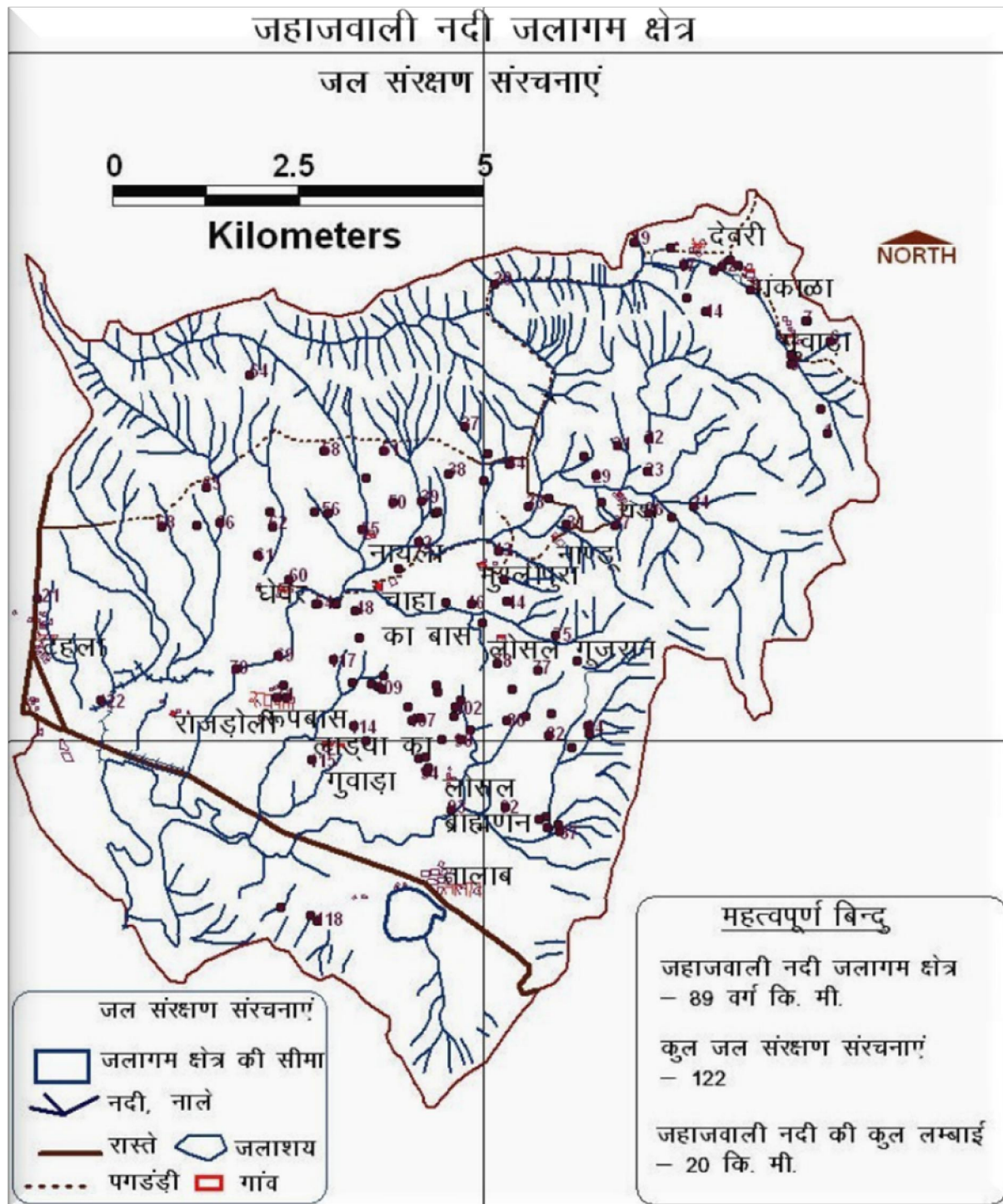
Total RWH structures made by TBS in the catchment: 120



Catchment Area of Rivulet Sarsa

Catchment area: 278.8 sq. km
Total length of Rivulet: 44.34 km

Total RWH structures made by TBS in the catchment: 267



Catchment Area of Rivulet Sarsa

Catchment area: 89sq. km
Total length of Rivulet: 20 km

Total RWH structures made by TBS in the catchment: 122

Concept of flowing...

After RWH structures were built by TBS, there is an additional recharge of groundwater to the tune of 20 per cent.

Though the base flow to the stream or river remained the same, there is an additional seepage (effluent seepage) of 17 per cent of rainfall to the river in non-monsoon months.

Seasonal run-off has come down from 35 per cent of the rainwater to only 10 per cent. There has been an increase in soil moisture: an additional 5 per cent of the rainwater is retained in the soil.

About 22 per cent of the run-off (excluding the 10 per cent seasonal run-off during the monsoon) is better regulated and spread out over the year.

This has been crucial in reviving the dried rivulets. If this run-off had not been regulated, the river would not flow throughout the year. This shows how fragile the ecosystem is...

Water Management

After conservation, the main issue surfaces up is the management of water. To encounter this, TBS has made community-based river-basin organization which works on the demand-side water management.

TWO MAIN POLICIES ARE:

- ***Compensatory Agricultural Crop Pattern:*** Under this system, a farmer can devote 25% of his land under water intensive crop but the rest of landholding should be under less water intensive crops.
- Another triumphant policy is to prevent the sale of agricultural land to industries or big private companies interested in water based enterprises such as brewery, soft-drinks, mineral-water etc.

Adaptation to climate change

The climate change is affecting various aspects of the human lives and ecology.

Water resources is among the most vulnerable sectors to be affected by the climate change. Change in rain-fall pattern is believed to exacerbate the scenario.

The TBS experiences reveal that promotion of traditional water harvesting structures through appropriate institutional mechanisms and financial arrangements would be the best intervention or adaptive mechanism to reduce the adverse impact of climate change on groundwater resources as well as farm economy based livelihood.

Reasons for Success

- **Traditional and simple water harvesting structures have been built requiring little capacity building of village people.**
- **Community has been involved in every stage of decision making.**
- **TBS has ensured involvement of all sections of the population.**
- **The dedicated local workers of TBS has ensured that the problems at community level get sorted amicably.**
- **Quick & visual demonstration effect of TBS' work in terms of availability of water for drinking and agriculture.**
- **Financial operations of TBS have been very transparent and clean.**
- **In comparison with structures built under Government programmes, TBS has built better quality structures at a significantly lower cost in much lesser time.**

USE OF INDIGENEOUS KNOWLEDGE IN TBS WORK

AWARENESS IN THE COMMUNITY

- Awareness of various aspects of water management
- Respect for culture, traditions and historical practices
- Will to work together for community's common interest

WORKING STRATEGY

- Constitution of Village Councils – Monthly meetings of all grown ups
- Maximum possible use of traditional technology with advice from engineers if needed
- All decisions including technical (siting, materials, design etc.) by Gram Sabha
- All decisions by consensus, and not majority
- Role of women in helping reach consensus
- Min. 30% of total cost contribution by community – rest from support agencies thru TBS

OPERATION AND MAINTENANCE

- Total responsibility assumed by the community

WATER – ABSTRACTION AND USE MANAGEMENT

- River Based Organization
- Responsible for planning & enforcing sustainable use of water, particularly in agriculture

Future Way of Tarun Bharat Sangh

Key Issues to be addressed

Governance: Good water governance requires effective and accountable socio-political and administrative systems adopting an *Integrated Water Resources Management (IWRM)* approach with transparent and participatory processes that address ecological and human needs.

Capacity Building: The need for capacity building, education and access to information for enhanced effectiveness in water management is unquestioned. These critical elements of the water development process are often treated as an add-on to programs, with scant regard to local capacity-building institutions, gender mainstreaming, cultural diversity and traditional knowledge or to long-term commitment.

Participation: Now it has been realized that water is a multi-stakeholder issue. There is a need for a closer examination of participation based on race, ethnicity, economic status, age, and religion to ensure inclusiveness.

Cont...

Recommended actions for future

1. Institutionalize policy advocacy

- Facilitate thinking outside the "water box" to mitigate Climate Change Impacts
- Creating National Awareness and political support for water conservation
- Review and revise national laws and policies to reflect the principles of the right to water and sanitation

2. Strengthen water governance

- Strengthen Local Action to Improve Water Governance

3. River basin management through IWRM approach

- Promote IWRM approach to address adaptation to climate change.
- Scale-up the rainwater harvesting systems.
- Increase the number of river and lake basin and groundwater organizations, their strength and capacity.
- Build on existing local knowledge.
- Integrate social and ecological sustainability.

Summary

In period of 25 years, over 10,000 Rain-Water Harvesting (RWH) structures have been restored.

The effects are visible in terms of recharging of wells and aquifers, renewed flow of rivulets which had been dry for many years, increased bio-mass productivity, significant increase in agriculture production, reversal of out-migration and reduction in women's drudgery.

Due to high fodder & water availability, villagers have also benefited from selling milk products through an informal cooperative arrangement.

It is very important to capture the rainwater, which just comes and goes in a few hours.

....That
is how

BLUE

brought

CHANGE



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