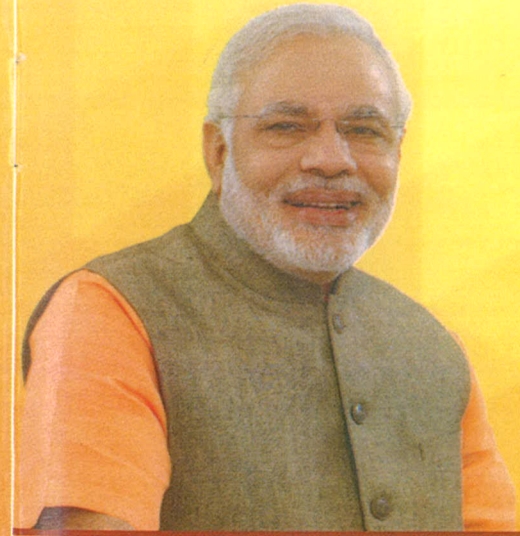




“
Water scarcity in Gujarat was a common phenomenon until the State Government decided to work towards water security across the State through conjunctive use of water and people's participation.

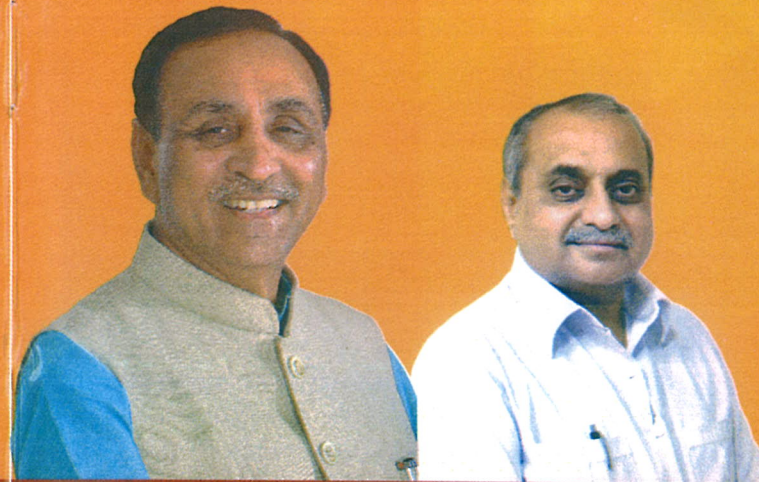
We continue our collective efforts for efficient management of statewide water resources related infrastructure and improving hygiene and sanitation level.

Shri Vijay Rupani
Hon'ble Chief Minister, Gujarat



Transformation of Gujarat

Holistic Approach to Water Management



“Water - Precious Gift of God”

- Shri Narendra Modi



Hardship of the Past

- Migration of humans and cattle during drought became a thing of the past



Goals for Bright Future

- Achieving 100% irrigation potential
- Coverage of 50% irrigated area under Micro Irrigation
- 100% piped water supply to all households
- Hand pump free Gujarat



Socio-economic Empowerment of Women

- Substantial reduction in drudgery of women to fetch water from distance and spare time available with them has been now utilized for fruitful economic activities.
- Women have been actively participating in water management by heading about 30% Pani Samitis covering 5265 villages.
- Women have been playing a key role in about 18149 milk co-operatives in the State. About 157 lakh liter milk is collected by women every day; leading to economic development.
- On industrious involvement of women in dairy activities, the milch animal population has increased from 69 lakh in 2007 to 88 lakh in 2012 indicating a growth of 28%.
- Milk Production has almost doubled from 53 lakh MT. in 2001-02 to 111 lakh MT in 2013-14

Transformation of Gujarat

Holistic Approach to Water Management

- Challenges
- Strategy
- Best Practices
- Outcomes



1. Challenges

a. Low availability of water in Gujarat

	Gujarat	India	%
Average annual rainfall (in mm)	811	1208	67%
Surface water Availability (in million cubic meter)	38100	690000	5.52%
Ground water availability (in million cubic meter)	17500	433000	4.04%
Per capita availability (in cubic meter per year)	920	1720	53.50%

b. High proportion of water stressed area

- Gujarat has 6% of total geographical area of India, but 12.36% of water stressed area of India.
- 58.6% of total area of Gujarat is subject to water stress due to arid, semi arid and saline conditions.

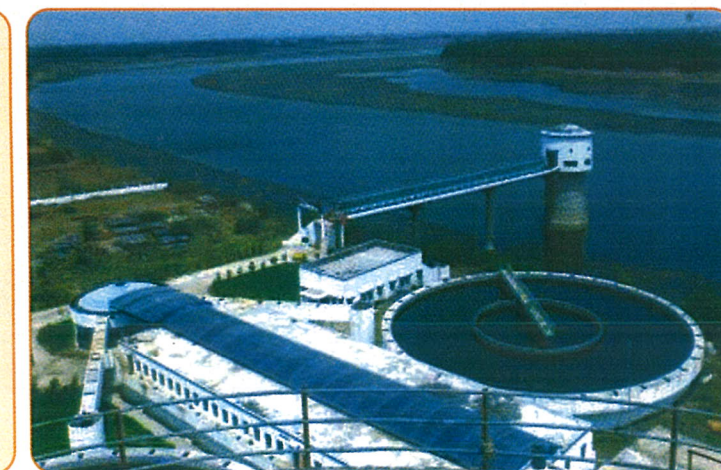
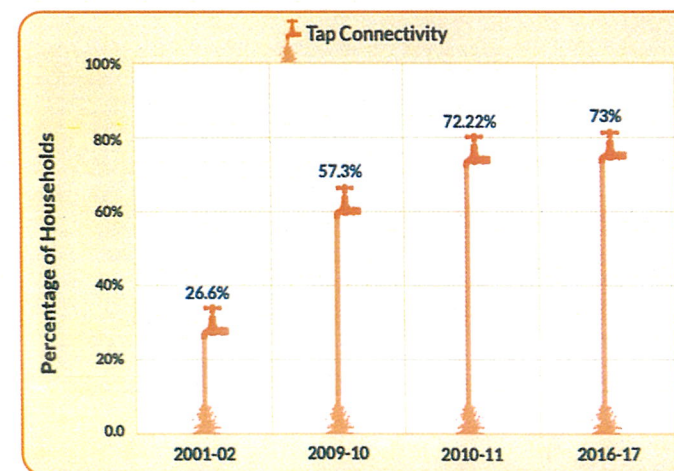
c. Unequal distribution : Rainfall and Water availability

	Share in Area	Average annual rainfall in mm	Share in water availability
South and Central Gujarat	24.26%	1114	69%
North Gujarat	19.63%	694	11%
Saurashtra	32.82%	659	17%
Kachchh	23.29%	402	3%

Improved Access to Safe Drinking Water

Sr. No	Parameter	Status in Year 2000	Status in Year 2017
1	Coverage of villages through Multi-Village water supply schemes	1910	12132*
2	Coverage of towns	26	195
3	Population covered	About 70 lakh	3.31 Crores
4	House hold Tap Connectivity (Rural)	26.6%	73%
5	In-village water supply schemes with community participation	82	15870
6	Habitations in which water supplied from ground water sources with Water Quality effected by Fluoride, Salinity, Nitrate & Alkalinity	7675	All habitations covered with surface water supply schemes

* Remaining villages are covered under local source based drinking water supply scheme.



Agriculture Growth

- Agricultural production grew by 255% between 2000 and 2015.
- The cropping intensity has increased from 115.56 % in 2004-05 to 131.32% in 2014-15.
- Substantial increase in dairy, horticulture and cash crops with commensurate increase in farmer income.

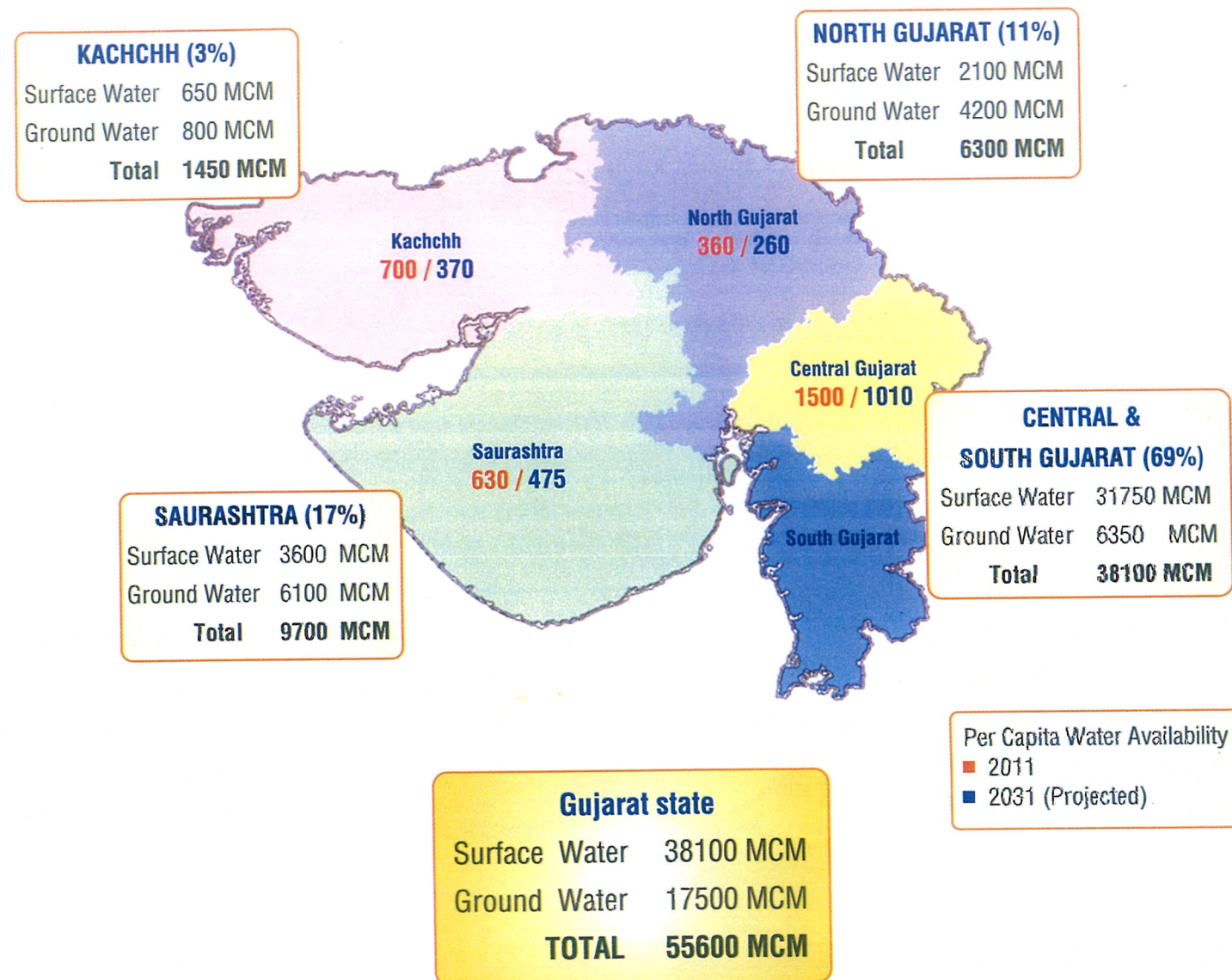
Increase in Crop Production

Crop	Unit	2001	2014	% increase
Food Grains	Lakh Tonnes	31.85	93.82	195%
Cotton	Lakh Bales	12.83	100.88	686%
Oil Seeds	Lakh Tonnes	17.38	74.70	330%
Milk	Lakh Tonnes	53.17	111.13	109%
Horticulture Crops :				
Fruits	Lakh Tonnes	22.60	80.30	255%
Vegetables	Lakh Tonnes	30.70	115.90	278%
Spices	Lakh Tonnes	2.20	10.30	372%

The semi-arid/arid drought prone districts of Banas kantha, Surendranagar and Kachchh have moved towards cash crops cultivation through application of micro-irrigation and substantially enhanced productivity levels. In the districts of Banaskantha, Surendranagar and Kachchh; the area covered under micro irrigation is 47 per cent (3 lakh ha), 9.0 per cent (58,703 ha) and 10.7 per cent (67,645 ha) of their net sown area respectively. Owing to this, the production of cash crops like castor, groundnut, cotton, cumin, potato, pomegranate crops has increased two to many folds.



Distribution of Water Resources in Gujarat & Per Capita Water Availability (Cubic Meter / Year)

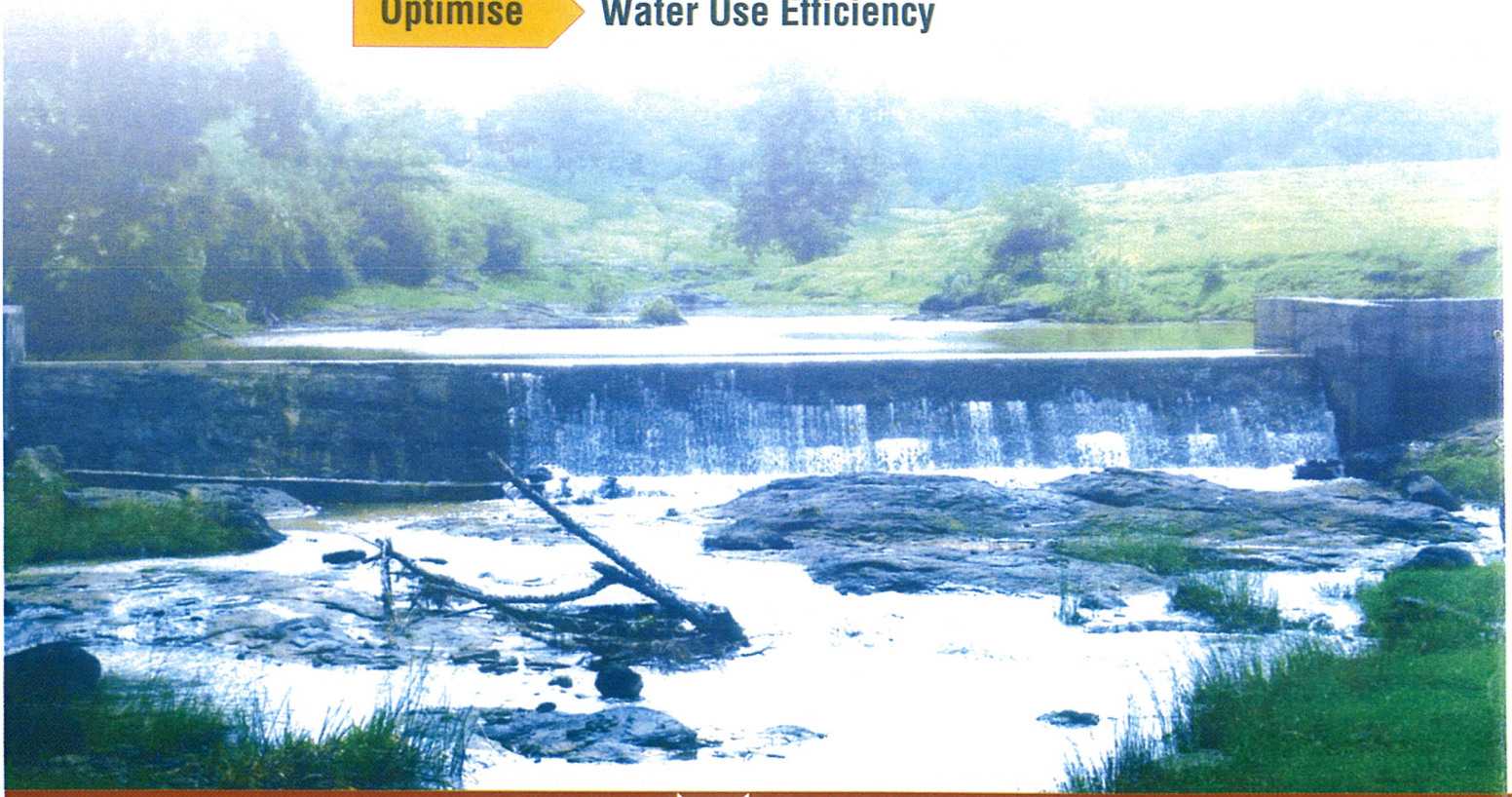


2. Strategies for Water Management

Maximise Water Conservation

Equalise Interbasin Transfer of Water

Optimise Water Use Efficiency



Increased Irrigation

- Achievement of 92% of the total Ultimate Irrigation Potential
 - Creation of 62.36 lakh hectare against total Ultimate Irrigation Potential of 67.92 lakh hectares.
- Accelerated pace of creation of Irrigation potential
 - Irrigable area rose in Gujarat from 38 lakh in 2001 hectares to 62.36 lakh hectare in 2016 i.e., by 64%. During the same period irrigation potential in India rose from 95 m.ha in 2001 to 113.53 m.ha in 2012, i.e., by 19.50%
- Ground Water Improvement
 - Over exploited blocks reduced from 40 in 1997 to 23 in 2013
 - Safe blocks increased from 103 in 1997 to 175 in 2013

Improved Water Use Efficiency

- Gujarat is one of the leading states in micro-irrigation development with about 16.2 per cent (i.e 15.56 Lakh ha) of net sown area is covered under micro-irrigation in Gujarat.
- Savings in water, power and fertilisers under Micro Irrigation

Savings in water	33% to 50%
Savings in energy costs	10% to 17%
Saving in labour costs	25% to 40%
Savings in Fertilizers (Nitrogen)	17% to 34%
Saving in pesticides	10% to 40%
Increase in crop Yield	20% to 38%
Increase in net return per Hectare	Rs.17,000.00
Increase in crop productivity	25% to 30%

4. Outcomes

Increased Irrigation

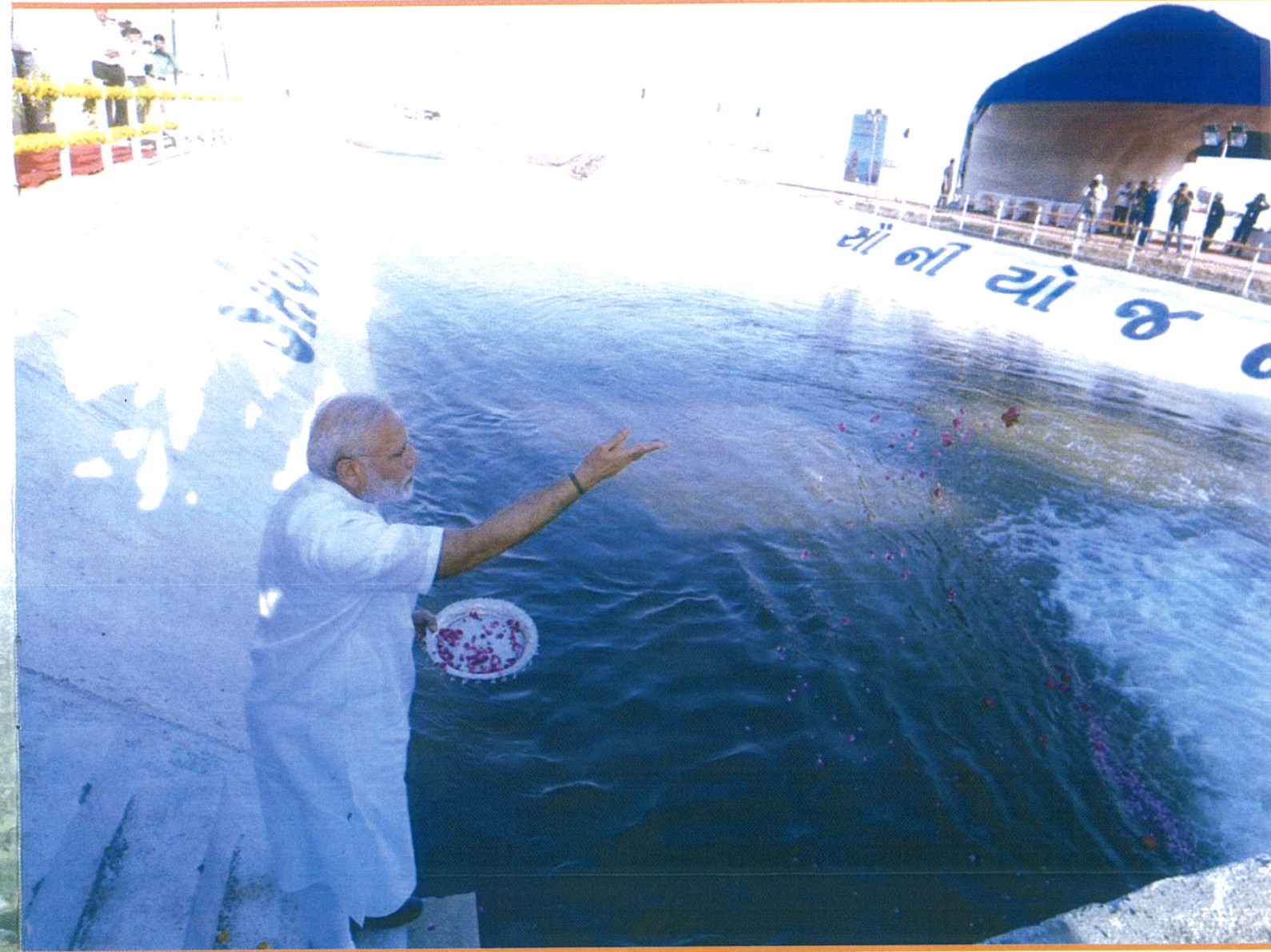
Improved Water Use Efficiency

Agriculture Growth

Improved Access to Safe Drinking Water

Socio-economic Empowerment of Women

Elimination of Migration



Interbasin Transfer of Water

Sujalam Sufalam Yojana

332 km long Spreading Canal and 689 km pipelines to transfer water from Narmada and Kadana river basins to North Gujarat for filling 7 reservoirs and ponds for augmenting irrigation in 3.7 lakh acres. Benefits start flowing in more than 3 lakh acres.

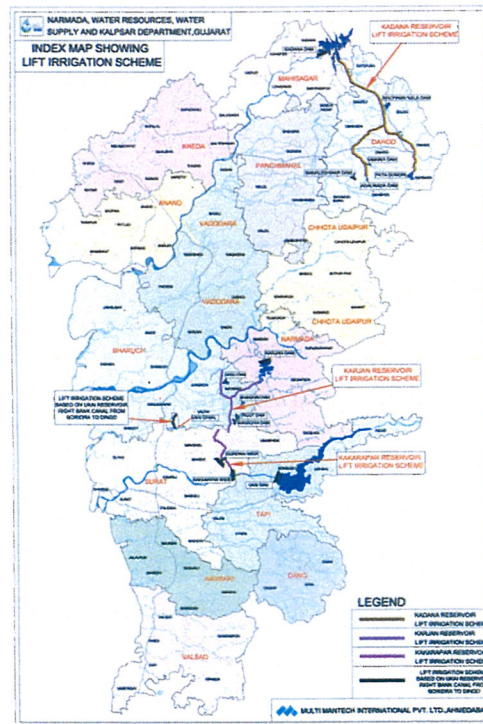


Sauni Yojana

Transfer of Narmada water through 1263 km long network of pipelines to fill 115 reservoirs in Saurashtra to augment irrigation in 8.25 lakh acres. Benefits started flowing in 1.80 lakh acres.

LI Schemes in Tribal areas

Transfer of water from Kadana, Karjan and Kakrapar reservoirs through 263 km long pipelines to benefit 97455 acres.



Pani Samiti

(Village Water & Sanitation Committee)

State Government decided to establish Water and Sanitation Management Organization (WASMO). It took up community managed reform process in drinking water sector for In-Village water supply schemes and tap connectivity in rural areas of Gujarat and also brought awareness regarding water usage and conservation.

- Total 18,245 Pani Samitis have been formed in 33 districts of Gujarat.
- More than 72,000 women have challenged and redefined gender roles by becoming members of Pani Samitis and even heading them in 5265 villages.



Preparation of village action plan by 'Pani Samiti' for In-Village water supply scheme

Participatory Irrigation Management

- 2731 Water User Associations formed in 9.36 lakh hectares
- Farmer led management of water sharing based on Government Tubewells

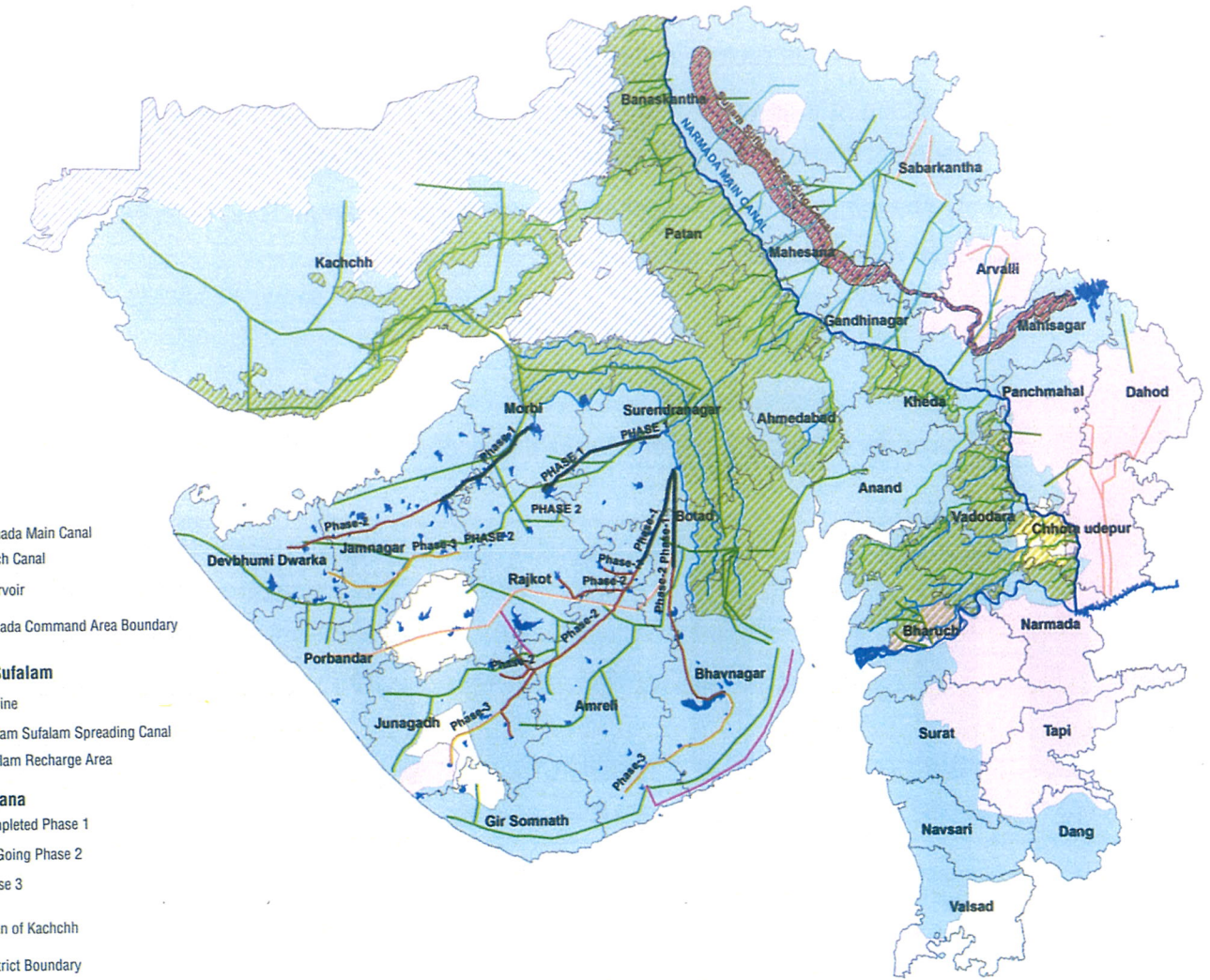


Extension, Renovation and Modernisation of Canal System

- Canal Distribution Network Efficiency enhancement through ERM works in 11 lakh hectare completed.



Map showing SSNNL Command Area & Area of Sujalam Sufalam Yojana and SAUNI Yojana



State Wide Drinking Water Supply Grid

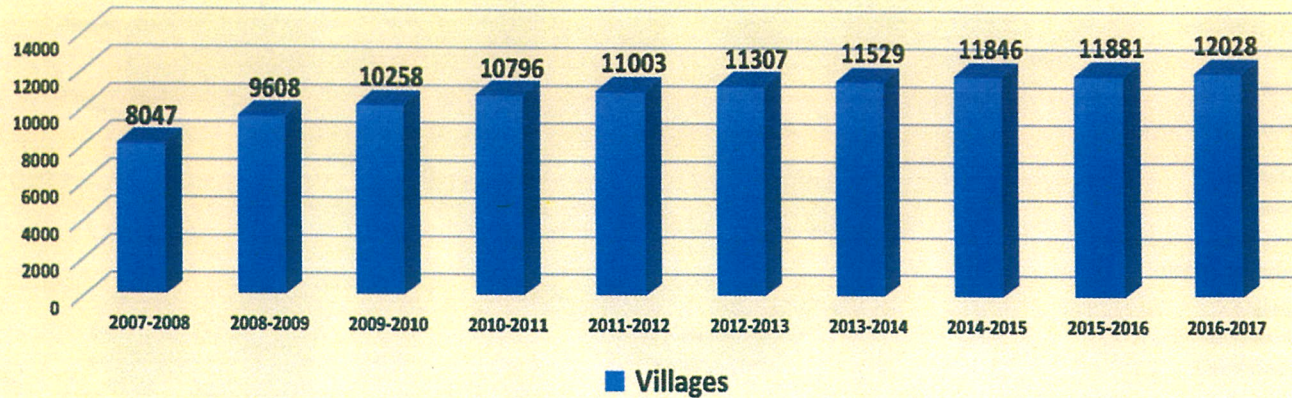
The Government of Gujarat has taken a transformative policy decision to provide safe drinking water to all people in the State.

It was a paradigm shift by switching over from excessive dependency on ground water to surface water. It developed extensive and robust infrastructure in the form of "State wide Drinking Water Supply Grid".

The Grid consists of 2862 km of Bulk Water Transmission pipelines, more than 1.2 lakh Kms of distribution network, 208 Water Treatment Plants with a total capacity of more than 3000 MLD.

At present 99.9% rural Habitations are covered with 55 Liter per capita per day drinking water supply and 92% of rural population is covered with piped water supply scheme.

Coverage of Villages under Multi Village Water Supply Schemes



Underground Pipeline

SSP - Underground Pipelines (UGPL) Sub Minors to save precious land and water

- SSP - the largest irrigation canal network having 71,748 km length
- Sub-Minors (the fifth level canal in the hierarchical canal network) form a major part - 48,320 km (67%)
- Acquisition of private land was a constraint in implementation of Sub-Minors and this was responsible for the gap between IP created and IP utilized.
- In the first phase of implementation, more than 15,500 km length of UGPL Sub-Minors was completed in just two years' time in 54 Talukas of 16 Districts (farmers of water stressed areas responded very well) - Average cost Rs. 41,081 per hectare
 - Effectively only three months are available in summer to carry out work when there is no standing crop
- In the second phase, the work is in progress in another 4 lakh hectare area, out of which, 1,35,480 hectare is completed by laying UGPL of 3620 km length.

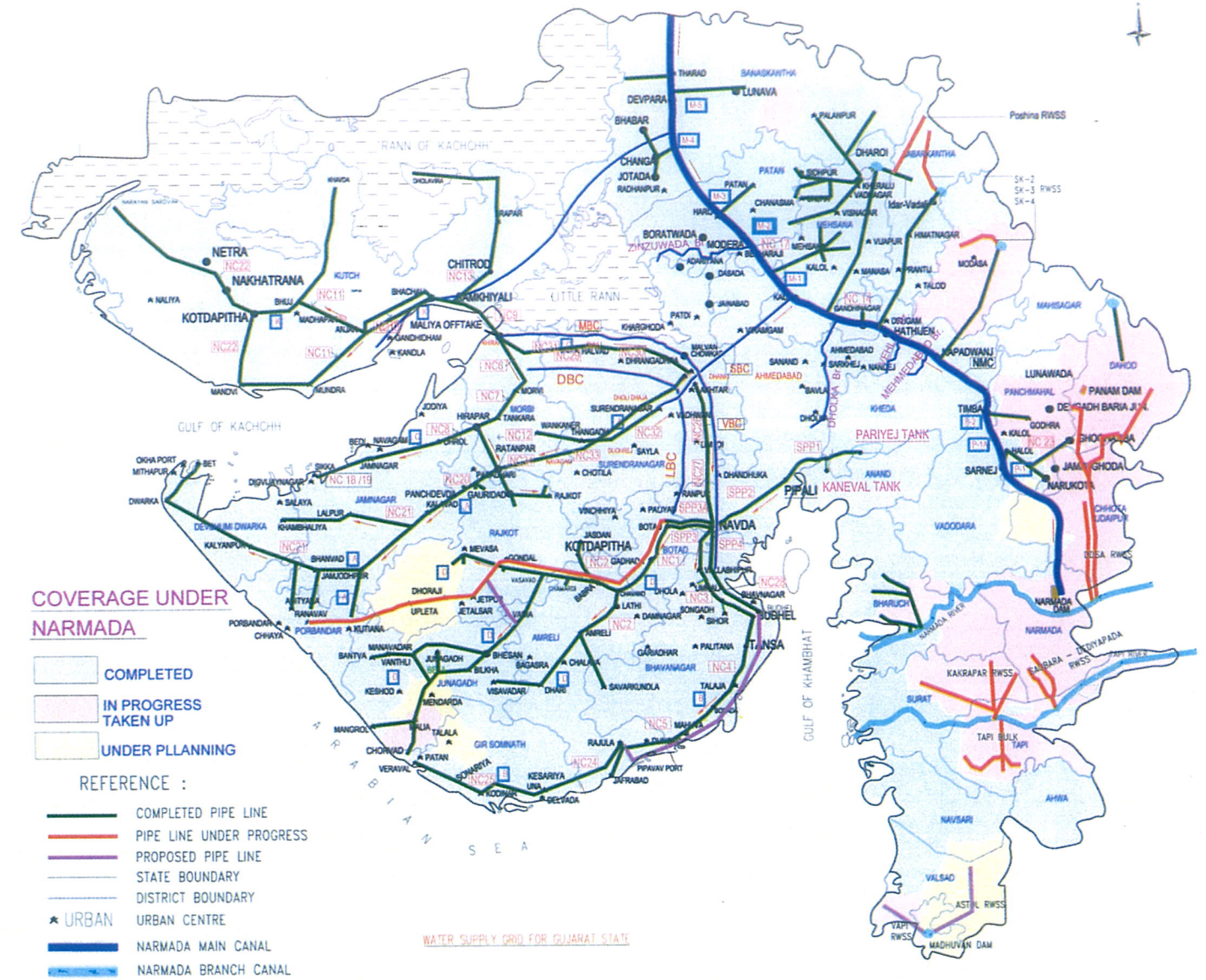


Micro Irrigation

- Gujarat has started Micro Irrigation in 2003-04
- 15.6 lakh ha. area has been covered
- The assistance through subsidy has been enhanced from 60% to 70 % for general and from 70% to 85% for SC/ST category farmers
- Special incentives provided for green house / net house to boost horticulture development
- Priority in power connection for micro irrigation.



Gujarat State wide water supply Grid



3. Best Practices

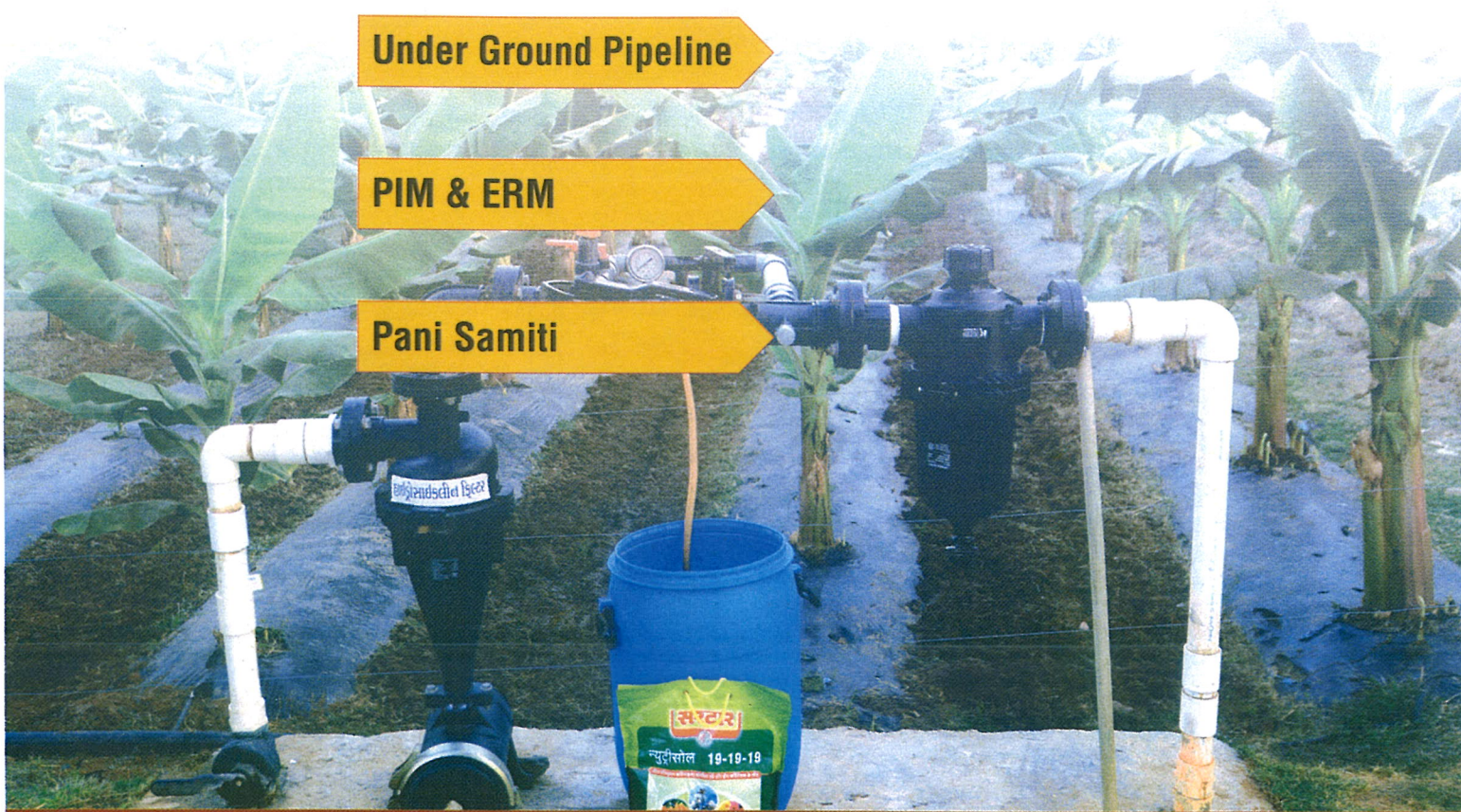
Water Conservation

Micro Irrigation

Under Ground Pipeline

PIM & ERM

Pani Samiti



Water Conservation : Sardar Patel Participatory Irrigation Scheme

- i. Massive campaign for construction of checkdams in 185 river basins
- ii. Involvement of NGOs, Farmer groups and industries in creating checkdams, deepening of ponds and desilting of reservoirs

Activity	Quantity	Storage (Mcft)	Benefitted Area (Ha.)
Check Dams & Bori Bunds	294185	27882	416209
Khet Talavadi	305882	13099	196491
Van Talavadi	5241	157	2358
Tank Deepening	26619	5324	79857
Total	631927	46462	694915

