

# Surface Irrigation and Livelihoods: Results of User-Managed Irrigation Systems in Maharashtra, India

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# Introduction

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- India's total irrigation potential: **139.9 million hectare**  
# Created: **102.77 million hectare**  
# Utilized: **87.23 million hectare (2006-07)**
- To bridge the gap, various policy reforms were undertaken by the Central & state governments.
- Started with the implementation of Command Area Development (CAD) program (1974-75).
- Finally various acts, guidelines, and policies were drafted by states for farmer's participation in irrigation management.
- Gujarat (1995), Andhra Pradesh (1997), Madhya Pradesh (1999), Karnataka (2000) and Orissa (2002), Maharashtra (2005).

# Introduction- Maharashtra Profile

Geographical Area	30.8 M.ha.
Total Population	100 M (2001 Census)
Cultivable Area	22.54 M.ha.
Annual Rainfall	500- 6000 mm (avg.1300 mm)
River Basins	Krishna, Godavari, Tapi, Narmada and west flowing rivers of Konkan
Total Irrigation Potential (Surface and Groundwater)	12.6 M.Ha.
Irrigation Potential Created	6.3 M.Ha.
Irrigation Potential Utilized	4.8 M.Ha. (2003-04)

# Introduction- PIM in Maharashtra

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- Traditional System of Cooperation for management of Irrigation water- *Phad System*
- Co-operative lift irrigation schemes at Panchaganga and Bhogavati rivers.
- Guidelines on PIM in 1992. Policy decision by state government in July, 2001 on formation of Cooperative WUA.
- Maharashtra Management of Irrigation System by Farmers Act, 2005 (MMISF)

# Introduction- PIM in Maharashtra

	Number	CCA (in 000' Ha.)
WUA which have Started Functioning	2577	1010.7
WUA whose Agreement is done	271	93.2
Registered WUA, Agreement is yet to be done	1049	393.9
WUA under Proposal	3189	1065.5

Source: DIRD, PUNE

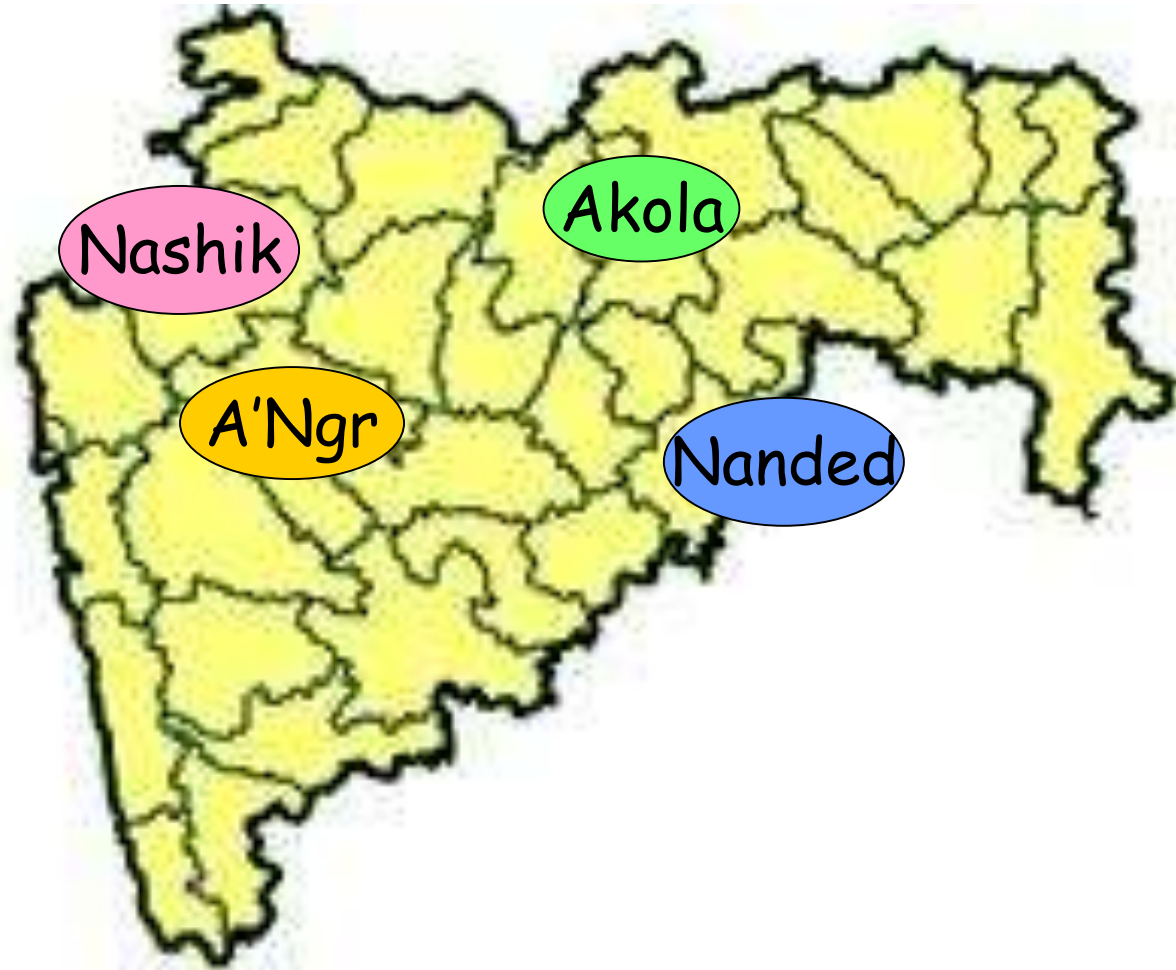
[www.iwmi.org](http://www.iwmi.org)

# Objective of the Study

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To understand how the formation of village institution (WUAs) has an impact on the stakeholders livelihoods.

# Methodology- Study Area



Source; Wikipedia

[www.iwmi.org](http://www.iwmi.org)

# Methodology- Selection of WUAs and Respondents

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- WUA's selection- Preliminary field survey, Informal discussions, Schedule.
- Final selection based on performance criteria.
- Respondent selection- Random sampling (10%). Representing head, middle and tail.
- Primary information from respondents- Schedule, FGD and Informal discussions
- Secondary Information- Records, literature review.



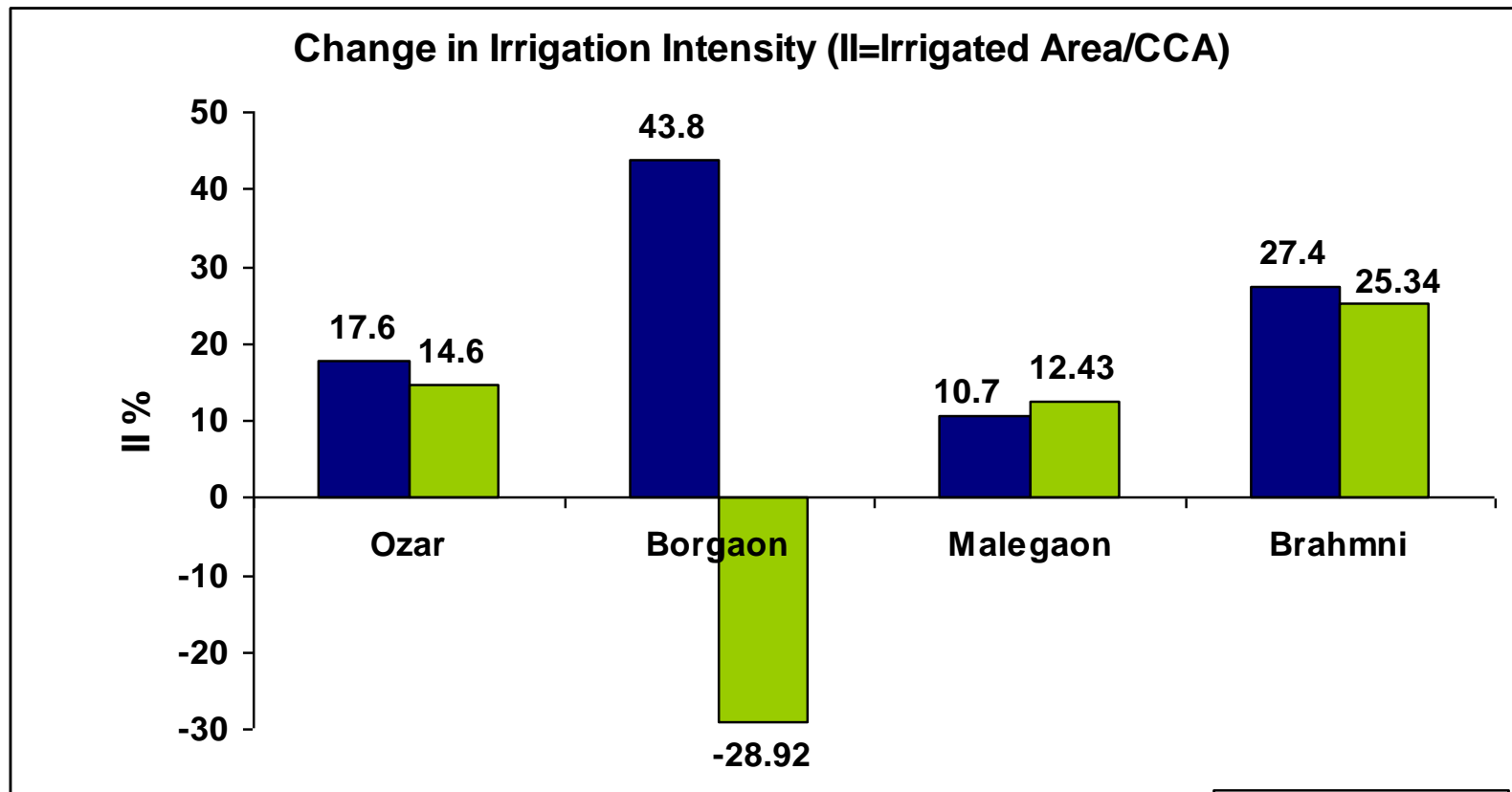
# Methodology- Selected WUA's

	Head	Tail
Major Project & Civil Society Promoted	<b>Yogeshwar WUA, Brahmani, Mula Irrigation Project, Ahmednagar (MRBC-D3M2)</b>	
Major Project & ID Promoted	<b>Kisan WUA, Borgaon, Katepurna Irrigation Project, Akola (Borgaon M1-Borgaon Distributory, LBC)</b>	<b>Krishna Kalva WUA, Malegaon, Purna Irrigation Project, Nanded (LBC-TD2-have 4 minors)</b>
Medium Project & Civil Society Promoted		<b>Jai Yogeshwar WUA, Ozar, Waghad Irrigation Project, Nashik (WRBC- M19 &amp; M18A)</b>

# Profile of Selected WUA's

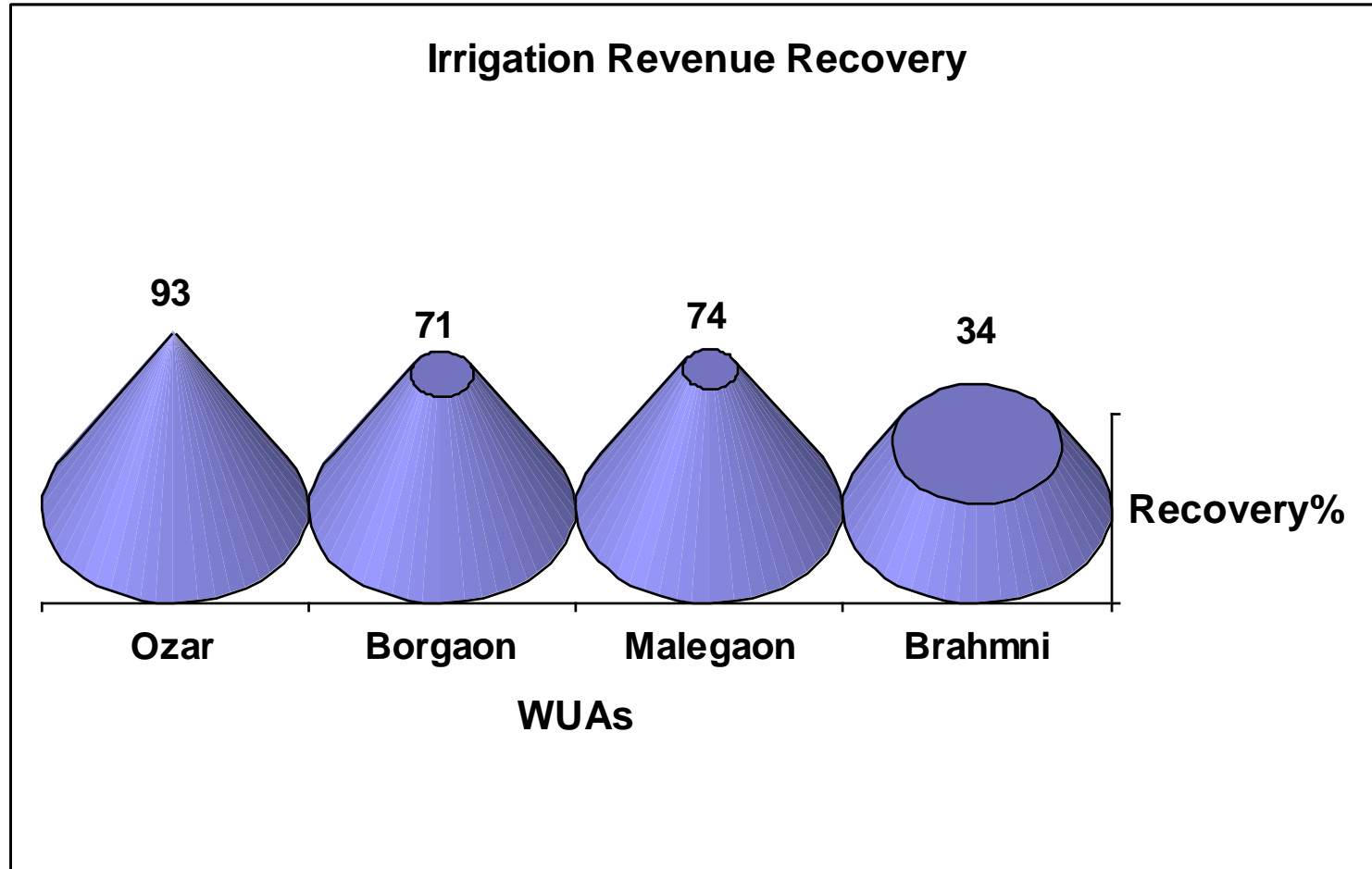
Name	Jai Yogeshwar WUA, Ozar	Kisan WUA, Borgaon	Krishan Kalva WUA, Malegaon	Yogeshwar WUA, Brahmni
CCA	595	121	1036.1	292
ICA	390	101	658.32	200
Water Allotment- Kharif	273 TCM	-	999 TCM	185.75 TCM
Rabi	587 TCM	Not Found	3426 TCM	464.96 TCM
Summer	-	Not found	1526 TCM	124.02 TCM
Total Beneficiaries	339	64	581	273
Total Members	292	64	295	172
Number of years of watering	15 (1991-92)	4 (2000-01)	14 (1991-92)	8 (1997-98)
Composition	87% general	45% general	91% general	85% general
Irrigation mode	Conjunctive	Canal	Conjunctive	Conjunctive

# Performance of WUAs - Irrigated Area

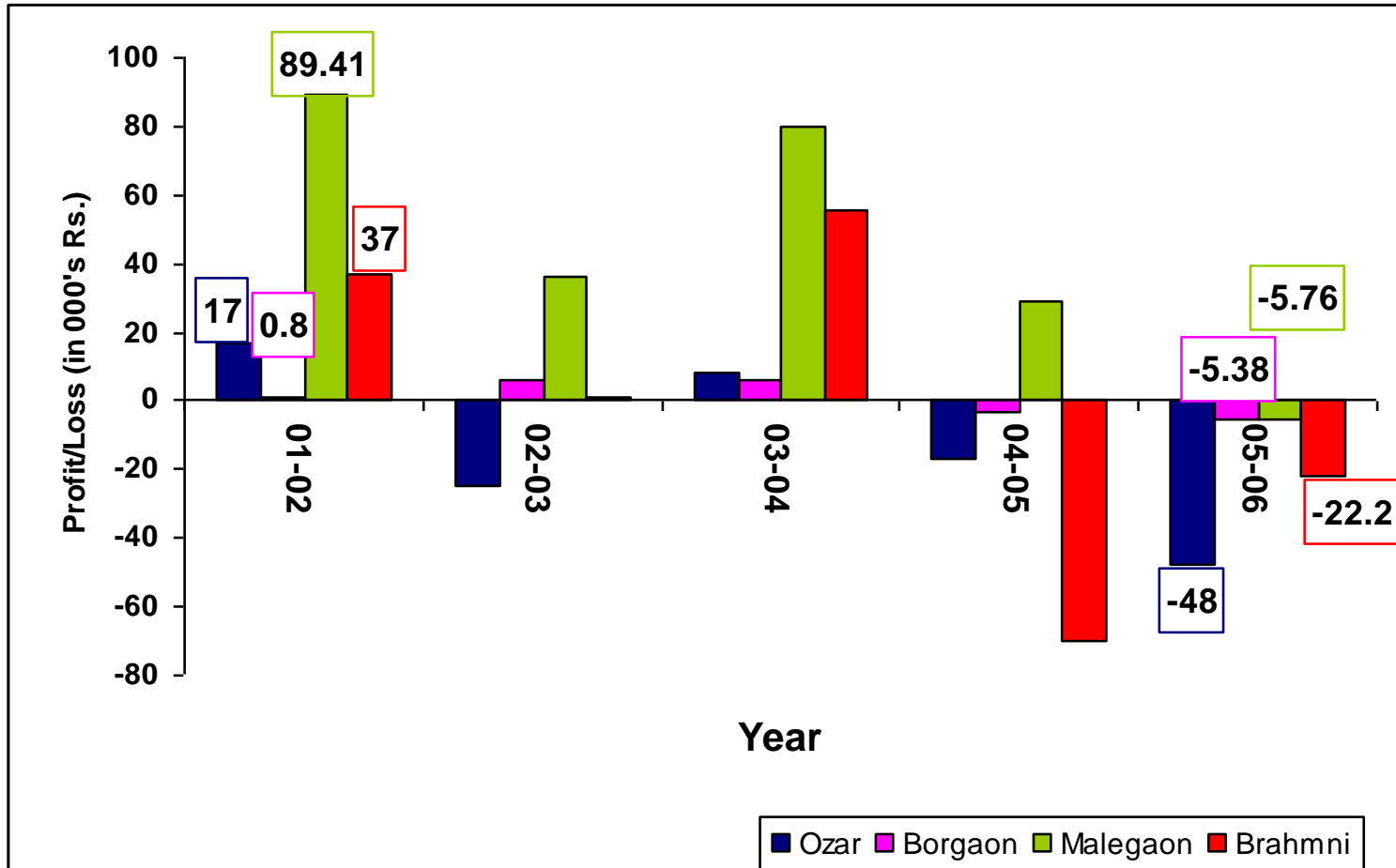


Dam Storage Levels	Pre WUA (in million m3)	Post WUA (in million m3)
Waghad (Ozar)	58.63	76.44
Katepurna (Borgaon)	86.35	68.05
Purna (Malegaon)	677.43	1052.07
Mula (Brahmni)	736.12	736.12

# Performance of WUAs- Recovery



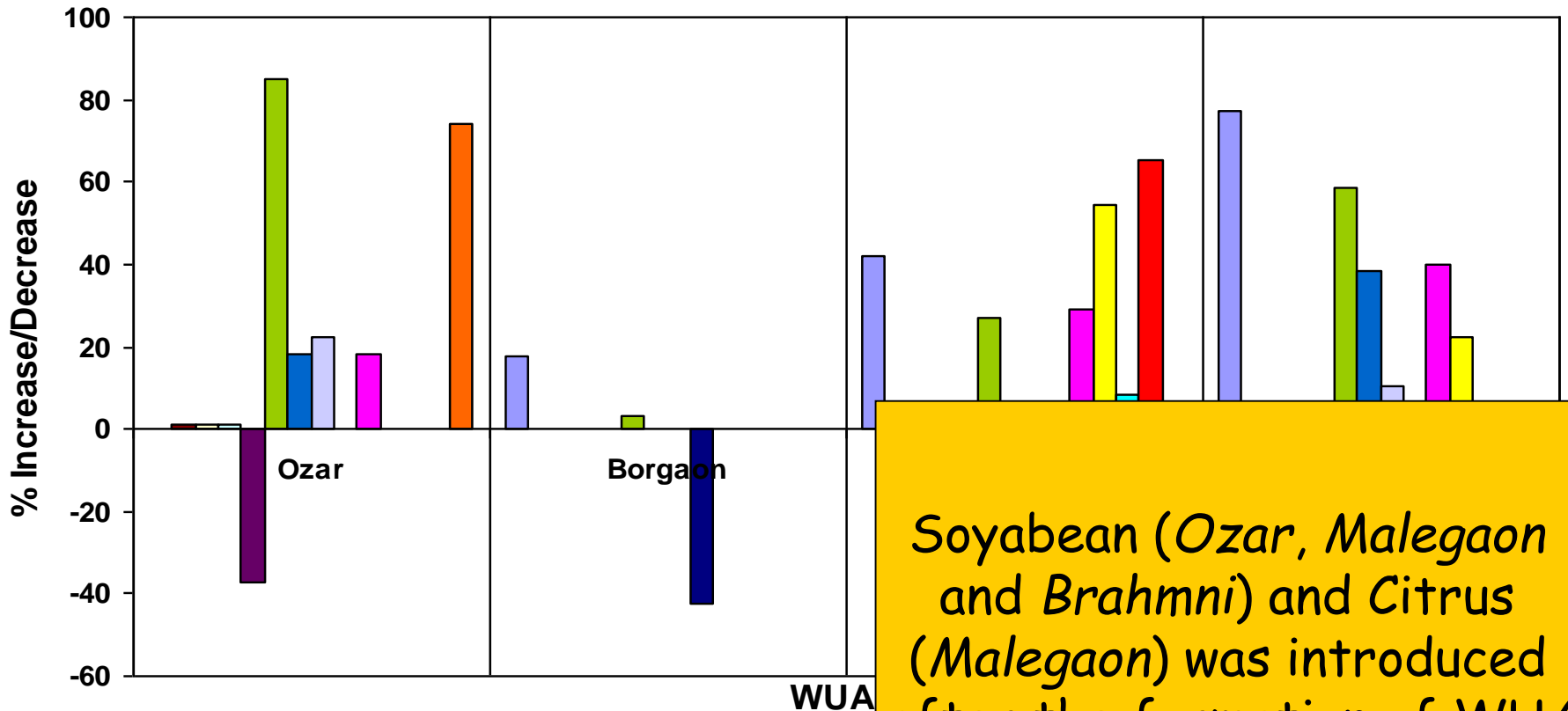
# Performance of WUAs- Financial Position



- Increasing cost of minor repair: Transferred without R&R.
- Same irrigation charges from past 3-4 years

# Impact on Livelihoods- Crop Productivity

## Changes in Average Crop Productivity

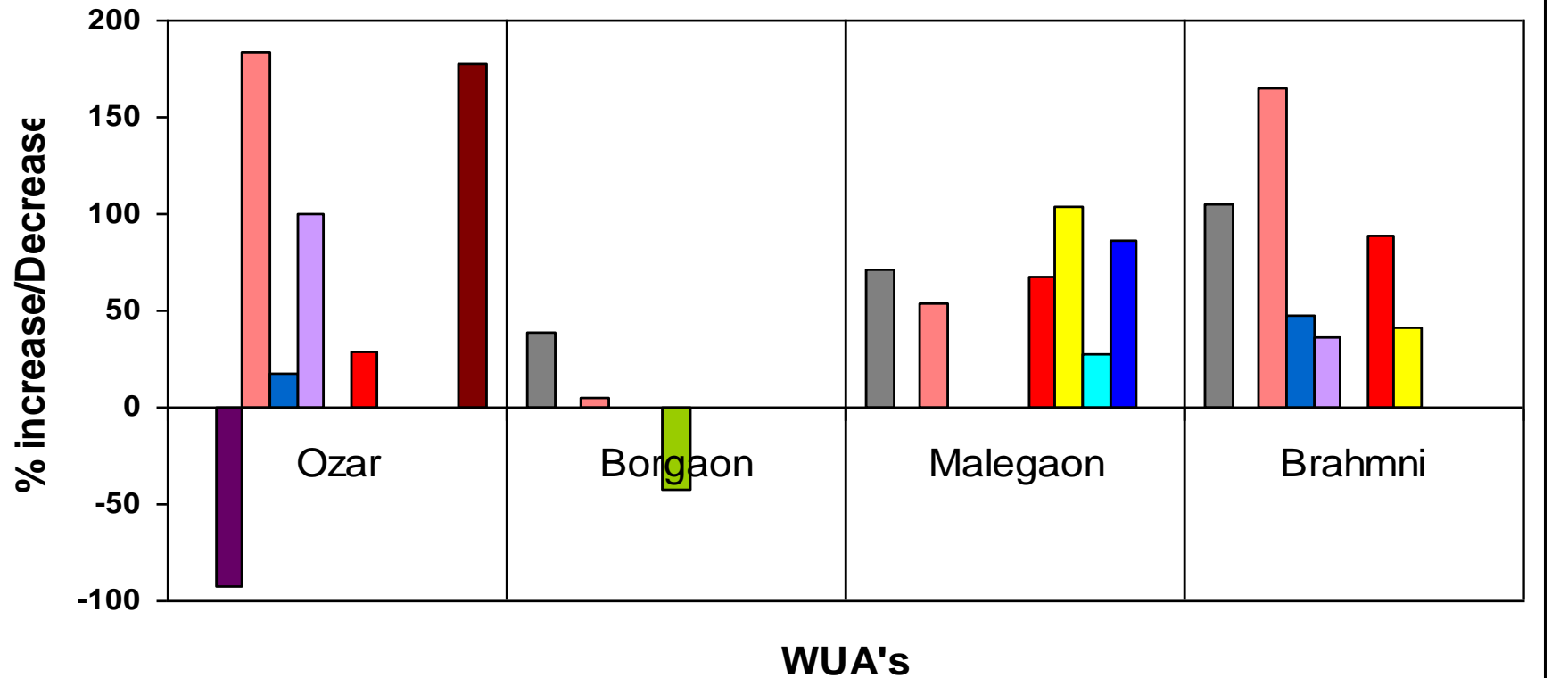


Soyabean (*Ozar, Malegaon and Brahmni*) and Citrus (*Malegaon*) was introduced after the formation of WUA

- Cotton
- Tomato
- Wheat
- Groundnut
- Sugarcane
- Banana
- T

# Impact on Livelihoods- Profit

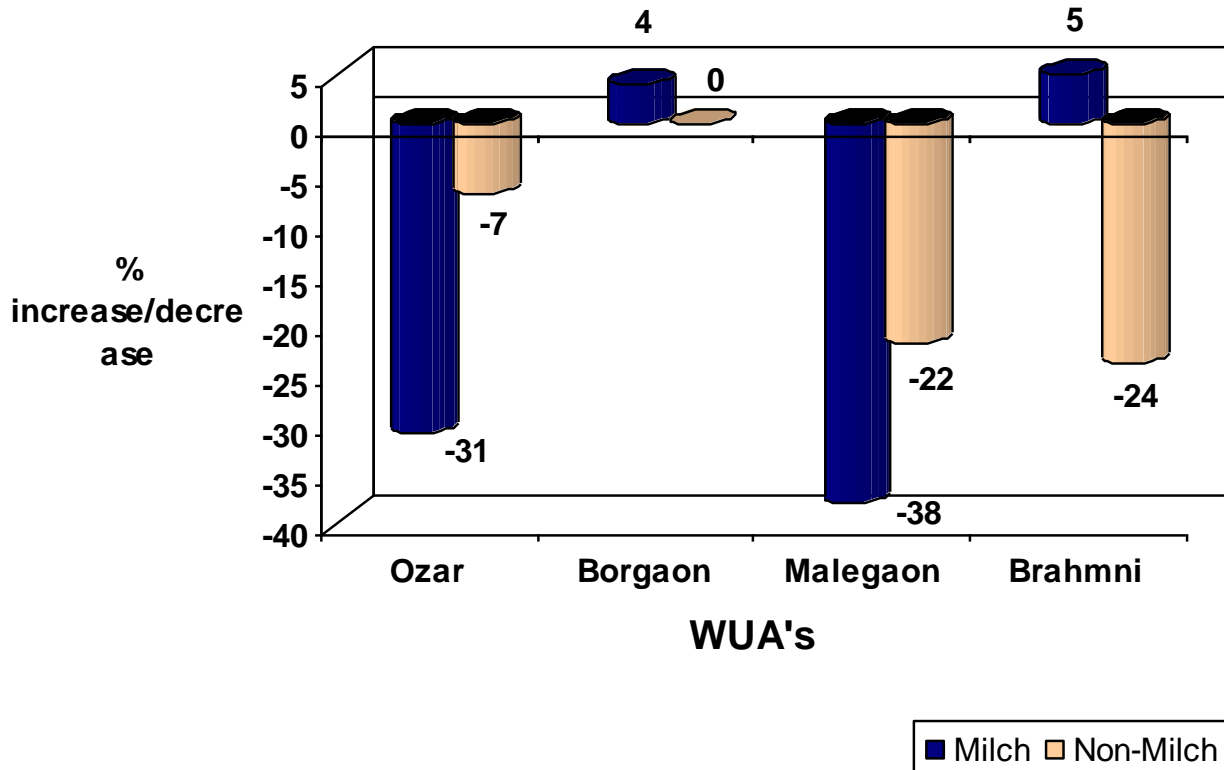
## Profit/Respondent



■ Cotton    ■ Tomato    ■ Wheat    ■ Gram    ■ Onion    ■ Sunflower    ■ Groundnut  
■ Sugarcane    ■ Banana    ■ Turmeric    ■ Grapes

# Impact on Livelihoods- Livestock

Change in Livestock of the Respondent

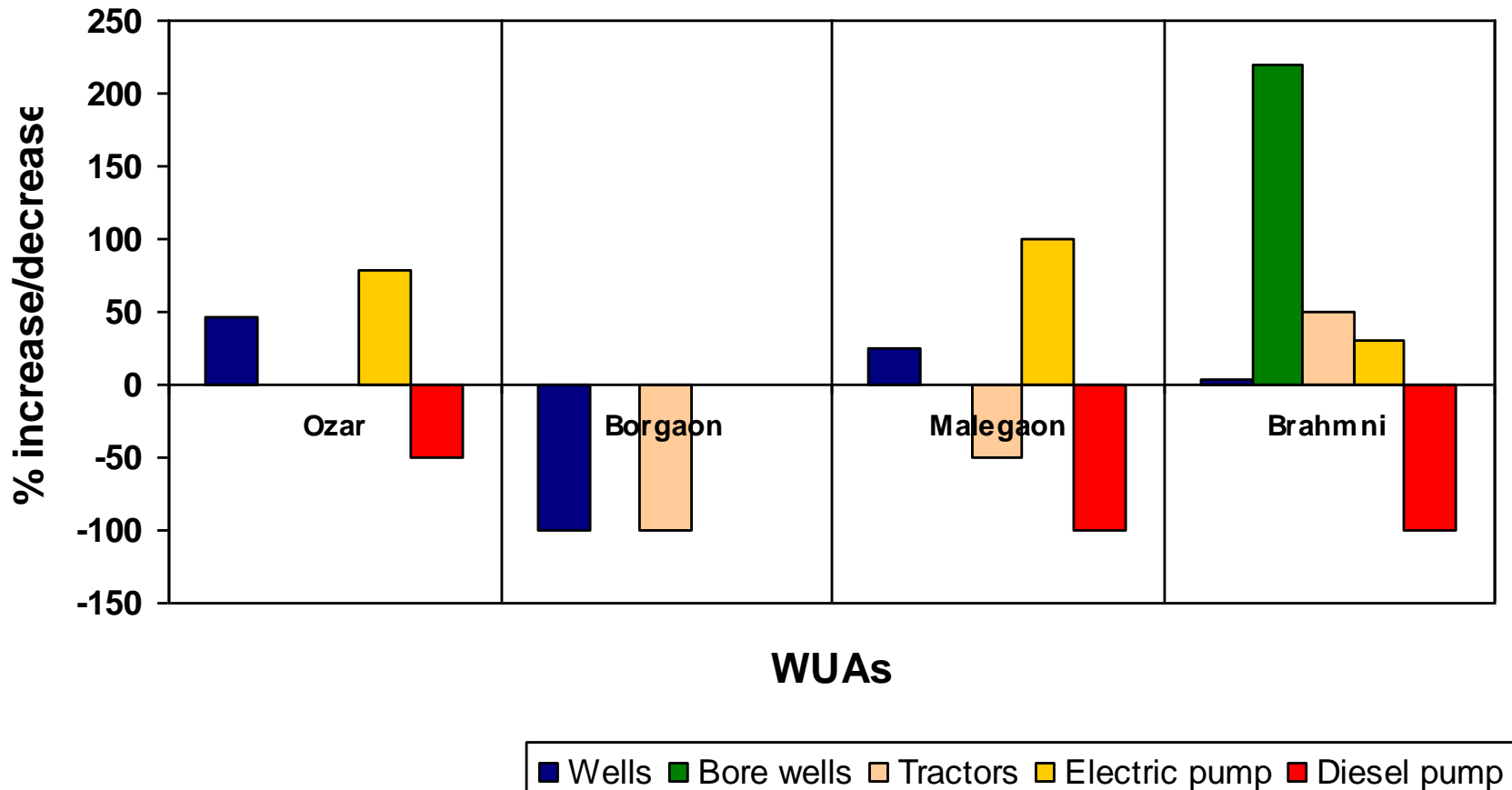


- Milch animals- a) shift in cropping pattern, b) labor requirement, c) less profit.
- Non-Milch population- a) use of modern technology, b) cost factor



# Impact on Livelihoods- Assets

## Change in Assets of the Respondents

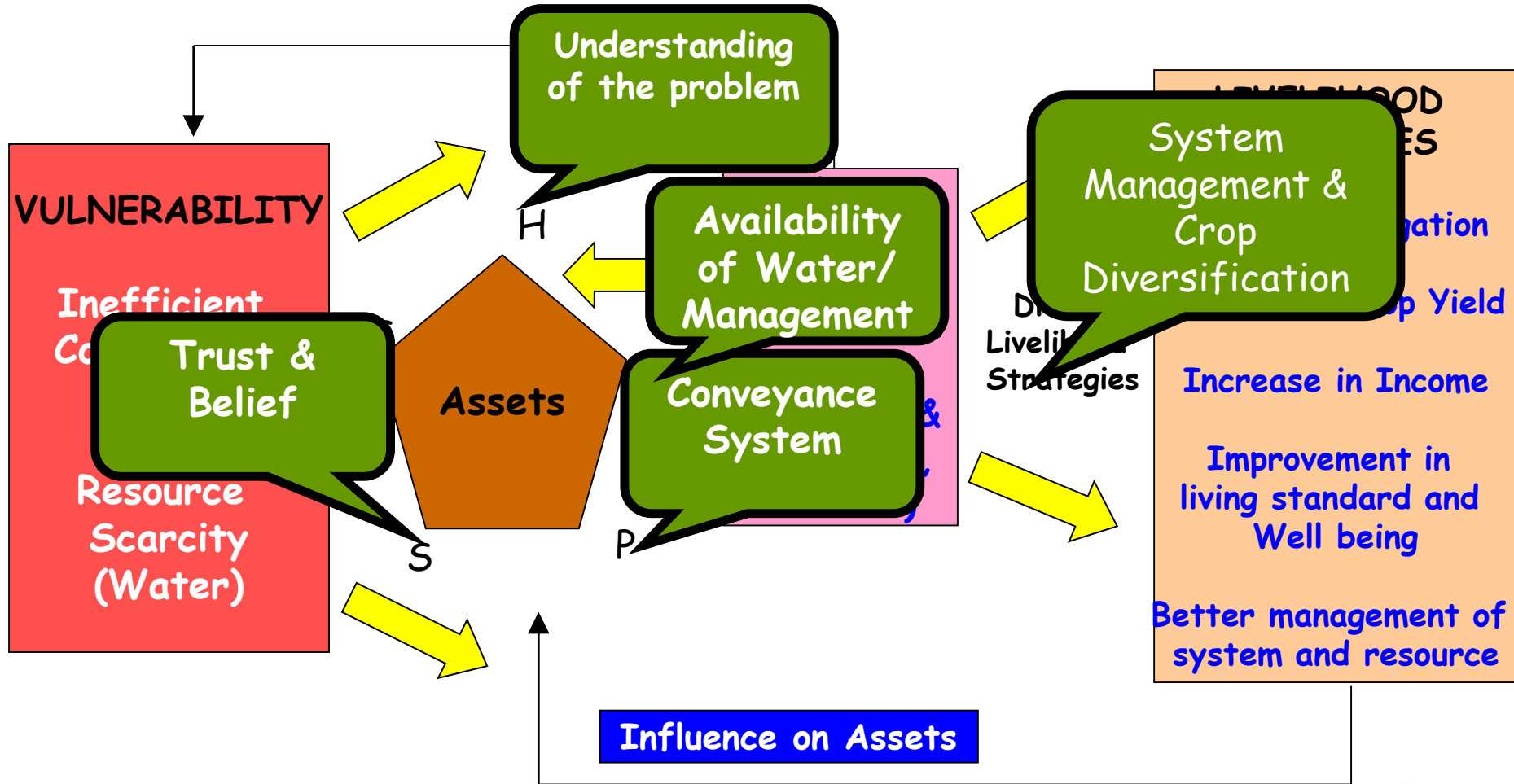


# Livelihood Impacts

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- Assured irrigation and increase in net irrigated area
- Shift in cropping pattern
- Increase in crop productivity and associated profit
- Impact on livestock and assets
- Assured work for local & migrant labors for a period of time
- Less conflicts and improved relationship among farmers
- Improvement in conveyance system and better management of resource.

# Catalyst for such Impacts



# What Next?

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- To achieve more irrigation in available water.
- Better equity across command.
- For this to happen, requirement of efficient physical system in place (physical asset).
- Then probably volumetric pricing makes much more sense.

# Conclusion

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- PIM certainly has an impact on the livelihoods of the village community.
- To further strengthen the outcomes,
  - # physical infrastructure of the conveyance distribution system need to be made much more efficient by carrying out proper R&R work.
  - # WUAs need to be given Capacity Building and Technical trainings.
- Civil society organizations perhaps can play a major role in facilitating this.

THANK YOU

# Condition of Physical System



Minor 18A- Lined (Ozar)

Minor 18A- Unlined (Ozar)

