Stakeholder Engagement Report: Watershed Organisation Trust

CARIAA
Collaborative Adaptation Research Initiative in Africa and Asia

ASSAR
Adaptation at Scale in Semi-Arid Regions

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Stakeholder Engagement Report: Watershed Organisation Trust

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Introduction

As we envision the stakeholder engagement process we will engage with a cluster comprising of 15-20 (see Appendix 1) villages, the boundaries of which would be determined by the appropriate hydrological unit and ecological flows. Through an iterative process that spans two years, we will interact with communities and stakeholders at the cluster, village and household level, reaching out to more than 5000 households.

The process will also stretch from the local to the state level, incorporating the intermediate scale of government and reaching up to the national level where feasible. While communities form the base an integral part of any climate change adaptation and sustainable resource governance planning, community-based regimes operate within a complex web of nested institutional and policy regimes.

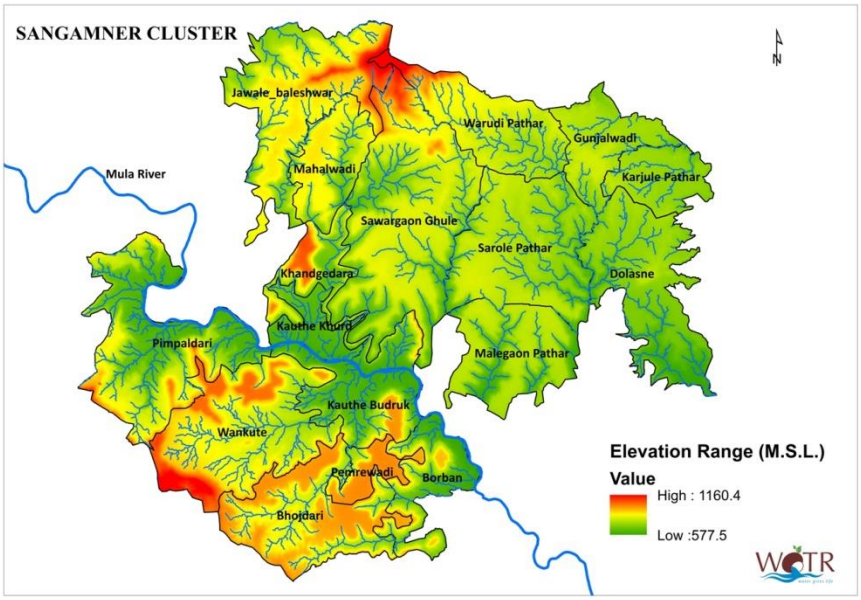

Figure 1: Sangamner cluster

Further, communities require support from outside agency to facilitate planning and implementation through capacity building, and technical and financial support. Developing strong cross scale linkages across the various levels of governance is a necessary step in ensuring that the processes developed through the stakeholder engagement are relevant to policy-makers and scalable.

At the end of this process, communities will be in a positions develop climate change adaptation and sustainable natural resource management plans (that focus on both demand and supply aspects) and proposals for implementation. The stakeholder engagement will also take advantage of, and strengthen existing links between communities and the state-actors, schemes, and departments, and facilitate the development of new linkages enabling these communities and households to take advantage of existing schemes. Finally through this Stakeholder engagement process we will develop a flexible, community oriented approach to operationalizing climate change adaptation planning and natural resource Management.

Stakeholder mapping

As part of the ASSAR project Stakeholder mapping was undertaken. On the basis of this mapping key stakeholders were selected for interviews and others invited to participate in the Stakeholder engagement workshops.

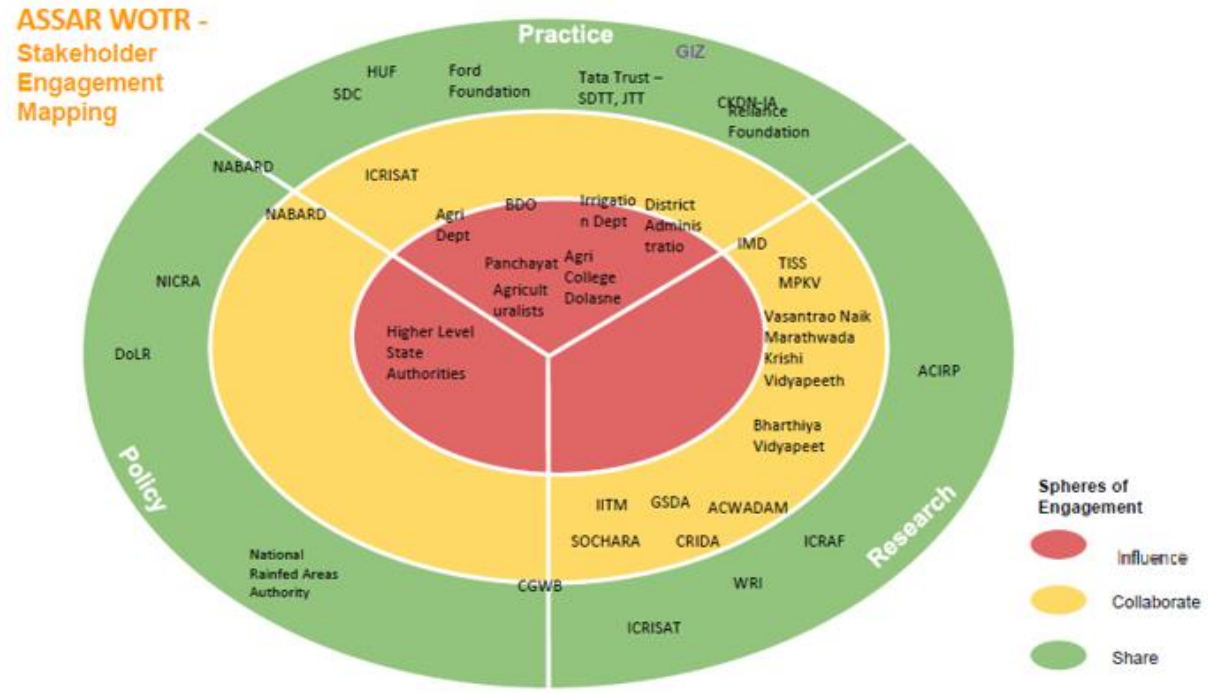

Figure 2: Placing stakeholder within spheres of influence

In August 2015, an RiU workshop was conducted in Bangalore, facilitated by Oxfam and attended by the South Asia ASSAR Partners. At the workshop, the Partners, clarified and focused their stakeholder maps, incorporating the insights from Oxfam and the power Analysis Exercise. The diagram attempted to delineate the lines of authority, financing and other aspects that characterized the relationships between stakeholders. The exercise helped us to identify key stakeholders, ie those stakeholders whom it is felt play a pivotal role in the implementation of widespread climate change adaptation.

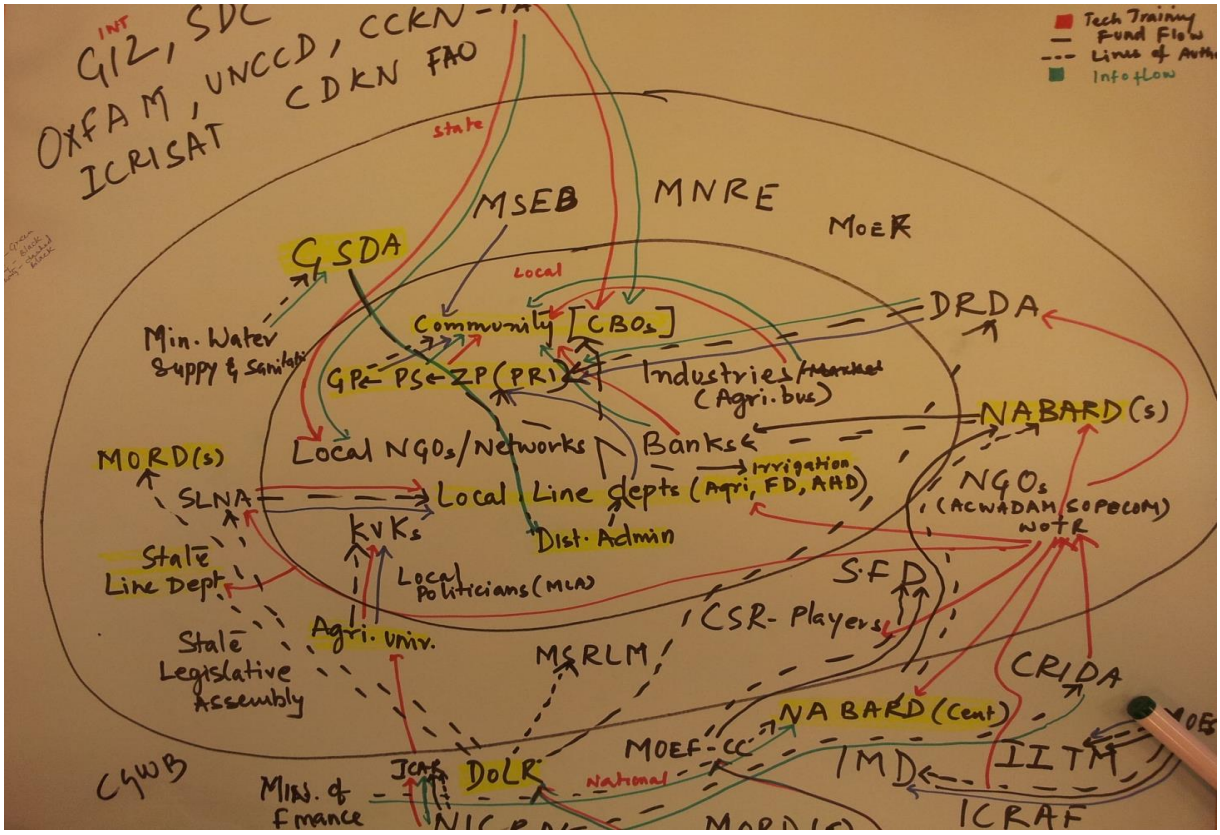

Figure 3: Understanding linkages between stakeholders

After Identifying the key stakeholders, the stakeholders were arranged according to their influence (power) as well as their positions vis-à-vis the problem (ie climate change adaptation). From this analysis it became apparent that while at the macro and transnational scale stakeholders were receptive to discussion on climate change adaptation, the somewhat more constrained actors at the local level, were not. Further many, organization fell within what were characterized as floaters, ie stakeholders that had an ambiguous position vis-à-vis climate change adaptation.

High Influence	Agribusiness Industry	PRIs, State Line Dept MORD, MOEFCC WB	NABARD International Funding Agencies, FAO
Medium Influence	Local Line Dept Local Politicians	DoLR, CCKN-IA Community (CBOs) Local Banks, Local Media	Dist Administration NABARD (Regional) NGO (National and State), ICAR/CGIAR
Low Influence		Agricultural University CSR, DRDA	GSDA, NRAA Local NGO/Networks CGWB
	Blocker	**Floater**	**Champion**

Figure 4: Power analysis

Key stakeholder interviews

The key informants were interviewed for climate change and impacts and vulnerability, coping mechanisms, probable solutions barriers to address the issue. These key informants were representatives of government agencies, Civil Society, Academics and Technical specialists, as well as community representatives. Seven key informant interviews were undertaken. All interviews have been transcribed and the transcripts are being prepared for analysis. The key informant interviews will complement the stakeholder engagement process.

Sr No.	**Name of the Expert**	**Other Details**
STATE LEVEL		
1.	Dr. N. Chattopadhyay	Deputy Director General of Meteorology (Agrimet), , Agricultural Meteorology Division , India Meteorological Department
2.	Mr. Khandare	Joint Director, Groundwater Surveys and Development Agency, Pune
3.	Dr. Himanshu Kulkarni	Executive Director, Advanced Center for Water Resources Development and Management *(ACWADAM)*
4.	Dr. Jayaraman tjayaraman@tiss.edu	Professor, Dean School of Habitat Studies Chairperson, Center for Disaster Management Tata Institute of Social Sciences (TISS), Mumbai
DISTRICT /BLOCK LEVEL		
5.	Mr. Anil Kawade, IAS	District Collector Ahmednagar & Chairperson for Disaster Management Committee
6.	Mr. Sharad Ghorpade	Tahsildar Sangamner – Disaster Management Committee
7.	Community members: Women& Men	Sangamner Transect Villages

First stakeholder engagement workshop

The 1st stakeholder engagement workshop was organised on the 25th of March 2015 to discuss water issues and to frame the perspectives of the Stakeholders.

Representatives (a man and woman) from 18 villages were invited to participate in the SE. besides these, representatives from the local authorities and NGOs working in the area were also invited. The local authorities invited were – the district collector, the block agriculture officer, staff from the Groundwater Survey and Development Agency, representative from the Local Agriculture University and the NABARD district officer). The meeting was well represented by variety of stakeholders and ensured gender inclusion from different backgrounds. They represented village level government bodies (Gram Panchayat), Women's self-help groups, Village development Committees, irrigated land-owing farmers, marginal rainfed farmers, landless poor, up-stream and down-stream villages. Local NGOs, an agriculture academic center, the local agriculture officer also participated. However, due to the year ending (being the month of March) the local government officials were unable to participate.

Figure 5: Community member explains a stakeholder map

The Stakeholder engagement process

Following the general introduction, the objective of defining the Water Problem was presented to the participants, who did agree that it was a subject that was important to all. The workshop was divided into three sessions.

Session 1

In the first session the participants were formed into three mixed groups and given different topics to discuss.

Group 1

To identify stakeholders related to the water issue. Here participants categorized the stakeholders into three levels.

(i) Those who are directly impacted within the village (the smallest unit) eg. large landowners with water resources, rainfed farmers, landless poor, hamlets and the main village, the different caste communities, large and small ruminant owners etc.

(ii) The secondary stakeholders – the neighboring villages in the upstream and downstream, the private water tanker providers, etc

(iii) Those outside the village but whose plans influences the water use in the village eg government plans and policy, service providers eg NGOs, the government officials at the block, district and state levels.

Process

1. **Step I:** the group discussed and listed all the groups using water for various purposes such as agriculture, livestock, domestic, drinking, etc. Then they listed the source of this water coming in the village.
2. **Step II:** The group identified the three categories of stakeholders as given below:
    a. The Primary stakeholders –Those who are directly impacted within the village (the smallest unit) e.g. large landowners with water resources, rainfed farmers, landless poor, hamlets and the main village, the different caste communities, large and small ruminant owners etc.
    b. The secondary stakeholders – the neighboring villages in the upstream and downstream, the private water tanker providers, etc.
    c. The Tertiary stakeholders –Those outside the village but whose plans influences the water use in the village e.g. government plans and policy, service providers eg NGOs, the government officials at the block, district and state levels
3. **Step III:** the group then took cue cards with color codes for each category. Yellow for Category ‘a’, blue for category ‘b’ and pink for category ‘c’.

4. **Step IV:** group then had a detailed discussion on categorizing the list of stakeholders prepared in step I. After reaching consensus through voting for e.g. Gram panchayat being a consumer is primary stakeholder and as supplier it is secondary as well, this led to a debate in the group; to reach consensus the group classified Gram panchayat in both the categories. They prepared the cue cards category wise and arranged then in three concentric circles; yellow being the inner most followed by blue in the middle and pink in the outermost circle.

Highlights

1. If there is dam or a passing pipeline in a village for water supply, then water should be given to all irrespective of their role as a stakeholder, whether primary or secondary.
2. The water supply timings are generally not in keeping with the water requirement timings of the first two level stakeholders. Hence, the group had a consensus on the fact that the tertiary stakeholders must discuss with primary and secondary stakeholders before planning the supply mechanism of water.

Group 2

This group had to identify the different users of water within a village and how these have been influenced by watershed development (as watershed development is a large program in India). What are the impacts in a year of good rainfall and in a year of drought and pre-watershed across three agricultural seasons - Winter (Rabi), Monsoon (Kharif) and Summer. User categories were identified and the group rated the impacts. The main uses as decided by the groups are irrigation, rainfed agriculture, drinking water use, domestic use, livestock, large and small ruminants, birds, small livelihood activities, poultry, dairy and construction. What was interesting was that strong debates took place between women and men and the large farmer and the landless poor, as they had to identify the categories and give the rating by consensus.

The groups had a task of identifying water related issues in pre and post watershed development scenarios and in various climatic conditions (good rainfall and drought years).

Process

1. **Step I:** the groups had a discussion and prepared an exhaustive list all the purposes for which water is used.
2. **Step II:** they then sorted the list and clubbed the water uses into 12 major water user categories.
3. **Step III:** the scenario of good rainfall year was given to them, they now started ranking on the basis of water sufficiency for these 12 water use categories on a scale of 1-5 (where 5 denote good sufficient and 1 denotes very bad).
4. **Step IV:** while ranking, the group had discussion on the fact that water availability varies across three seasons namely, kharif, rabi and summer. Hence giving overall ranking for a water use category will be misleading. This probed them to rank these categories in the three season's viz. kharif, rabi and summer separately for good rainfall year.

Observations:

i. During good rainfall year, there is an increase in lift irrigation; hence water availability for domestic purpose in all seasons is given a relatively lower rank.
ii. Participants came up with the water use category for birds also.
iii. There was a big debate on use of water for construction. The conflict was on commercial construction and house construction. However it was agreed upon that in villages whatever construction occurs, it is for house construction only.
iv. Maximum water is consumed by commercial poultry and dairy activities.
v. Though good rainfall occurs, but because of lift irrigation water availability reduces to great extent in summers, that there is less water available for small ruminants. But people have to call for tankers for large ruminants else the milk production is lowered or the animals die, which is a big economic loss for them.

5. **Step V:** after giving ranks in a good rainfall year, they ranked the water use categories in drought year and pre watershed scenario.
    a. **Observations:**
        i. ***Drought:*** lot of discussion occurred during ranking in the scenario. This was because, it was a mixed group and participants were from riverside, far away villages. To get to a consensus, the group followed a method, where the votes were taken for ranks and the rank favored by majority was considered.
        ii. According to large farmers practicing irrigation, water availability for irrigation was good however for livestock, there was shortage.
        iii. ***Pre watershed:*** here representatives from seven villages where watershed development had been completed were present and shared their pre watershed experiences. It came forth that, earlier for lifting water there was no mechanism/machines water hence, rabi agriculture and dairy was limited.
        iv. Water for drinking and domestic use was also available.

Reflections

1. Since the group had people from various locations and socio-economic strata, the viewpoints were different.
2. Even now all the group members experience water scarcity for drinking and for small ruminants.

Group 3

This group had to outline trends observed of (a) changes in climatic conditions viz. temperature and rainfall (from 2000-2015) and the impacts of the variability on human and natural resources

(b) changes in ground water levels from 2000-2015 and number of wells and bore-wells and (c) changes in irrigated area and cropping pattern across the same time scale.

Process

This group had three tasks (a) track meteorological variations, temperature and rainfall, (b) changes in water sources (wells and bore wells) focusing groundwater and (c) changes in area under cultivation and cropping pattern.

1. **Step I:** group discussed the changes in rainfall and temperature over a period of 15 years (2000-2015) and how this has impacted the agriculture, health, and other livelihoods of the people. They then drew graphs of temperature and rainfall separately tracking variations from mean and events like drought, good rainfall and hailstorms.

    Observations:

    i. The area experiences average rainfall but with greater variations and fluctuations in terms of intensity and frequency of rainy days.
    ii. In the past two years, the rainfall was normal, but monsoons have been late. Also the duration of monsoon is shrinking from four months to 2-3 months.
    iii. This has led to impacts on rain fed agriculture during Kharif (decrease in agricultural yield; need to change the crop; unavailability of fodder for large animals).
    iv. Since 2010, maximum temperature in summers in crossing 40 degree Celsius and average temperature has risen.
    v. This has increased pest attacks, affected their timing in the agricultural field, health especially children, livestock is more susceptible to diseases and produce less milk.
    vi. Increased temperature has also increased evaporation rates and number of irrigations to crops.
2. **Step II:** in the second phase group discussed the changes in the number of wells and bore wells and prepared the second graph. They also tracked the changes in the depth of the same along.

    Observations:

    i. The group observed that there was increase in the number of wells from a period of 2005-2010, post that it stopped increasing in number; however these wells are now being deepened.
    ii. Post 2010 there was a marked exponential increase in the number of bore wells, from couple of bore wells in a village to more than 150 bore wells in a single village.
    iii. They also observed that not only the number of wells/bore wells increased but also the depth of the wells and bore wells increased subsequently from 30 ft to 70 ft and 250 ft to >740 ft respectively. Bore wells near rivers also hit water after reaching a depth of 350 ft.
    iv. The water level across the year have also changed, till 2005 water in wells were available till March however post 2010 it is only till December-January.

3. **Step III:** in this phase group discussed the changes in the area under cultivation and cropping pattern.
    a. **Observations:**
        i. The area under cultivation has increased many fold post 2010 bringing waste land, fallow land also under cultivation in kharif and rabbi season.
        ii. This is because of three reasons (a) due to increase in private farm ponds, (b) lift irrigation and (c) small water storage structures like check dams.
        iii. Cropping pattern has also changed from 2005 from traditional pulses and cereals to cash crops like onion, tomato and pomegranate.
        iv. Milk production has also come as one of the major livelihood in the Sangamner area.

Highlights

1. Variation in rainfall has far reaching impact in kharif farming. Due to uncertain rainfalls, there has crept a need for irrigation for kharif crops to avoid crop loss.
2. They observed the increase in number of bore wells and attributed the cause to increase in farm ponds post 2011.
3. Then there was consensus on the observation that public water sources have dried but individual farmers have water in their sources.
4. They observed there has been an increase in lift irrigation from the River (during kharif and rabi), hence the depth of the bore wells near river has gone down.
5. Villagers also observed that there is now availability of clean drinking water, but how is unclear.
6. One of the conclusions that strongly came out from discussion is that there should be a complete ban on the bore wells; the other is that the villages have now become water intensive as the area under cultivation has increased along with the change in cropping pattern where crops now taken are water intensive.
7. Reason for the shift to cash crops was attributed to market returns. Participants shared their experiences on investments and return of the crops taken earlier and now.

As the plenary unfolded, and as each group presented their findings, the participants found the linkages between the 3 group presentations. The findings as documented by Group 3 – the changes in the trends and in particular of the ground water levels; the capture of water by the few through the new government program that promotes storage tanks and the bore wells were identified as areas to be addressed.

Session 2

The second session had same groups identified the coping mechanism people and government fall back on in times of water scarcity and in summers. This is related to water requirement for (a) domestic purposes with a focus on women and landless poor; (b) agriculture and (c) livestock. This was followed by Plenary - presentation and discussions. Many mechanisms were temporary

measures, however some were good practices eg villages had taken to water management; others were mal adaptive - large storage tanks lifting water from the underground stores and these being used by just a few farmers.

Agriculture

a) Two types of farmer category were formed as their coping mechanism varied in rain fed and irrigated cultivation.
b) Cropping patterns have been modified for kharif season; farmers are now taking short duration and less water intensive crops.
c) Only large farmers have farm ponds, drip and sprinklers, whereas others rely on water from nalas on drainage and small streams.
d) The issue to increasing bore well came up. Discussions proposed that this topic needed to be taken up at the village general body meeting (gram sabha). The group discussed on banning the digging of new bore wells, but they were uncertain on how to manage/regulate the existing ones.

Livestock

a. In the group I, there were participants who did not have any clue regarding coping mechanisms, whereas few participants had 'know-how' of what to do in case of water scarcity for livestock.
b. Common sources of water for livestock are not being maintained by anybody. There was a need felt to maintain these common water sources.
c. Farmers who had bore wells had water availability and were able to manage livestock properly. They also had some sharing mechanism of water resources for livestock.
d. Unavailability of water has also increased diseases in livestock.

Women and Landless

a. This group first identified, what are the major tasks taken up by women and landless related to water. These are agriculture, drinking water, health, poultry, dairy and construction work.
b. Women came with the problems of drinking water, domestic uses, fuel and health issues and landless participants came up with issues related to water availability livelihoods.
c. Major issue among women is drudgery, where they have to carry water from distances for domestic and livestock purposes.

Plenary Session 2

a. Participants collectively shared their experiences regarding government schemes and the common view was that, effective implementation and the reach of the scheme is very limited. This might be possible cause of failure of these schemes.
b. Many mechanisms were temporary measures, however some were good practices e.g. villages had taken to water management, and others may be mal adaptive - large storage

tanks lifting water from the underground stores and these being used by just a few farmers raising equity issues.

c. Efficient Water management is not an individualistic task, hence there is a need for a collective movement where all the stakeholders should come together.

The afternoon plenary session was a heated and extensive discussion with conflicting viewpoints on issues and steps needed to contain the aggravating water scarcity. All stakeholders unanimously agreed upon the fact that: water is a natural and national resource over which all creatures and people in all villages have indisputable right.

- **Sudhakar Borade, Divisional Agricultural officer:** People's participation is the key to manage development work successfully and yield fruitful results. Earlier schemes were formed in government head offices and sent to people for implementation. But lately, it is becoming more and more inclusive of people's participation and it has definitely showed improved results. Earlier the schemes contained only watershed development activities however now they have evolved into an integrated approach keeping ecosystem balance at the core. He emphasized the importance of gender inclusiveness (both men and women) in the process of community mobilization, decision making and finance management, for e.g. in a village Nimgaon Jawali, Sangamner block, men and women, together formed groups and devised a plan for Kharif agriculture, right from sowing to selling in market which lead to overall good returns as the investments were reduced.
- **Sarpanch**: Water management is the need of the hour as the time is not far where there will be serious wars related to water resources. Various government schemes come for only few years but their outcome are not measured, nor is the sustainability assessed. For example who can own a farm pond; how many have farm ponds have been constructed; who is benefitted, who suffered losses has not been assessed. As the number of farm ponds rise, the losses will increase in terms of water resource capital. So this groundwater storage should be the focus rather than surface water storage in farm ponds. Water management should be done in all areas water scarce and water abundance both.

In the concluding session, the participants discussed the Action Plan for the immediate next months:

(i) Participants would like to share the findings - the charts generated during the workshop – in their respective villages.

(ii) They stated a need for participatory water budgeting and its application in village for demand side water management.

(iii) They would like to take this forward in another workshop before monsoons in the month of May/ June 2015.

Follow-up of stakeholder engagement event

At the end of the first it stakeholder engagement event (SE1), the participants felt that there was a need to move the discussion forward from the workshop to the villages. This was felt necessary to increase the legitimacy of the process and ensure that all households are adequately involved at the outset.

The exercise was carried out from the 12th May – 8th June and covered a total of 18 villages. As part of the process community members were briefed on the discussions that had taken place at stakeholder engagement event and the discussion was on whether the village also shared the same experiences and how they consider how households are affected. Observations for different farmer groups identified are presented below:

Villagers in general

- The rains are very erratic, sometimes very heavy, often not enough and generally out of time.
- The temperature is increasing. A lot of water is lost in evaporation.

Farmers having Perennial Irrigation

- Would like to increase the area under pomegranate cultivation. They would like to grow tomato in summer as it fetches a higher price. However this requires more water for this.
- In the Kharif 80% of our crops are irrigated. We cultivate 20% of our land in Rabi (irrigated).
- We store water in the farm ponds, lifted from wells and borewells. Many farmers take loans to construct farm ponds.

Farmers taking seasonal irrigated crops

- Only farmers who have wells can take a Rabi crop. This is only if the rainfall is good.
- The electricity is irregular; we cannot pump up enough of water from borewells.
- If the rain is not good, we have to work as labourers in other villages.
- The number of bore wells is increasing. Recently someone dug a borewell and got slurry at 335 feet.

Farmers taking Rainfed Agriculture

- Not enough water for agriculture. 80% of farmers take uncertain agriculture in the kharif season.
- There is insufficient water for cattle. In monsoons we graze our livestock on our fields. In the dry season and drought we have to buy fodder.
- From December onwards and during the whole of a drought year we have to search for wage labour.
- The cost for digging a well is 2-3 lacs. It is risky. What if I do not get water?

Landless Poor

- Wage labour is our only source of income.
- When the crops are destroyed because of unseasonal heavy rains, or because of scarce rains, we do not find enough of agriculture wage work anywhere to support ourselves.
- In the main village the houses get water in pipes or from wells close by; in hamlets the water source is generally very far.

Women

- When water is scarce (summers and in drought) many women have to walk from about 1 to 5 kms making 3-4 trips a day and carry 2-3 pots at a time. Young girls miss school to help.

(about 6 hours a day is lost – besides the tiredness, bruises – yet she cannot complain).

- In times of water shortage (this is increasing), more women migrate for agriculture work, than men.
- Because of WSD and water for irrigation, the work load of women has increased. She has no time to rest and recover.

Reflection:

1. The importance of casual labour, particularly agricultural labour in the nearby command areas in Sangamner had previously not come up during discussion. Members of landless poor and rainfed farming households, undertake a daily *"up-down"* between the rainfed pathar villages and the neighbouring town of Narayagaon, to work on the irrigated fields there.
2. Farmers repeatedly communicated that they felt that the potential for openwells in the area had been saturated and are uncertain how all can access water for irrigation.
3. Direct discussions about borewells and water management led to community members retreating from the discussion and this appeared to be not very productive. This highlights the sensitivity of the issue and the need for new approaches.
4. Most villages highlighted the problem of drinking water as a serious concern. However they linked the same to the need for more investment by the state (i.e. new borewells for drinking water, a new scheme etc)
5. While farmers acknowledged that the evaporation from farm ponds was an avoidable loss, they still regarded farm ponds as a desirable asset. This is primarily because at present farm ponds provide, the only assured way to agricultural prosperity, as they enable farmers to support high value, perennial horticulture, particularly pomegranate.

Figure 6: Discussing the 1st Stakeholder Engagement with the Community in Sawargaon Ghule, Sangamner

Figure 7: Women talk about water related issues in Taluchiwadi, a Scheduled Tribe hamlet, Sangamner

Second stakeholder engagement event

Prior to the second stakeholder engagement event, on 7 July 2015, information was sent to the district authorities updating them about the key points emerging from first stakeholder engagement event. The district collector, the block agriculture officer, staff from the Groundwater Survey and Development Agency, representative from the Local Agriculture University and the NABARD district officer were invited to participate in the second event. The meeting was well represented by variety of stakeholders and ensured gender inclusion from different backgrounds. They represented village level government bodies (Gram Panchayat), Women's self-help groups, Village development Committees, irrigated land-owing farmers, marginal rainfed farmers, landless poor, up-stream and down-stream villages. A Water Management Expert from the Mahatma Phule Krishi Vidyalaya, and the Taluka Agriculture Officer also participated.

Session 1

The stakeholder engagement began with a short meditation session.

Session 2

The first session of the workshop began with a short recap of the events of the previous workshop. Harish Daware, the facilitator, walked the participants through the various graphs and charts and information that had been prepared during the previous workshop and village meetings.

Figure 8: Unpacking social differentiation with the larger patterns and trends

With the assistance of a few participants, Abhijeet Kavthekar, introduced a short activity designed to facilitate a conversation on the ways that climate change, weather variability and water scarcity affects households who have different levels of access to resources. These were observations gathered for the different types of farmer categories identified based on the village level meetings.

Discussion

This session elicited an active discussion among the participants about Women's work load:

- There has been an agreement among the women's group that due to changes in the cropping patterns i.e. shift from food crops to cash crops, has led to an increase in the work load of women throughout the year

- However, men were of the opinion that due to increased water availability and accessibility, the time spent on water collection has reduced and thus there has been no change in the work load.
- There was a concern among women about the equitable distribution of water and clarity in the role played by local administration.

Session 3

In this session, expert participants reflected on the points that were raised in the earlier discussion and highlighted the effects from their area of expertise. Staff of WOTR shared the findings of the Vulnerability Assessment (Co-DriVE) that was gathered from the project area.

Mr. Navale, Taluka Agricultural Officer:

- It is important to acknowledge how changing cropping patterns have increased the workloads of women, and that this topic has come up during the discussion good.
- Even after watershed development the water situation has further deteriorated. This is linked to the dramatic increase in number of borewells and growing water usage. Well density is so high, that the area currently resembles a Sieve.
- Cost of cultivation has increase but the yield is decreasing. There is an increasing competition in farming. From this point of view it is important to maintain a balance and reduce input costs. For this purpose it farmers should come together and form a cooperative farmer's group to reduce the costs and consolidate water use. Through this medium input costs will reduce and farmer groups could access schemes up to Rs. 2.5 crores from the agricultural department. These groups would also be able to access traders.
- The agricultural department provides extension services to farmers and farmers should feel free to contact the local agricultural officer, who's mobile phone no. is available in the public domain
- Water conservation – Drip irrigation can considerably reduce water usage and boost crop production. A 50% subsidy is available from agriculture department to install drip irrigation.

Renie Thomas – Hydro geologist (WOTR):

- There is a preponderance of basalt rock in the region, which implies there is limited groundwater storage capacity
- This situation has led to competition among farmers (competitive deepening of wells) Evaporation loses from farm ponds are very high. In a study of 4 farm ponds we found that 1 crore liters of water has evaporated in a year. In total there are 2700 farm ponds in the Sangamner block. There is an urgent need to take action to reduce these losses, while finding means for meeting water for irrigation.

Hemant Pinjan and Suchita Awasthi (WOTR):

- From the Vulnerability Assessment using the CoDriVE tool, conducted in 4 villages of the participating villages (and which is representative of the cluster of villages), a

short presentation was made outlining the major risks, impacts and coping strategies associated with climate change and climate variability that were articulated during a participatory vulnerability evaluation (for details see Appendix 2).

Dr. Shinde, Water Management Expert, Agriculture University Rahuri:

- There is an urgent need for the introduction of robust water governance to manage a water resource like groundwater.
- Water Budgeting: It is important to assess how much water is available and then accordingly limit water use to keep the water level stable.
- Farm ponds should be covered with thermacol to reduce evaporation losses.
- Reduce the use of spray pesticides
- Reduce the extent of run off

Mr. Rakesh Pangat, DDM NABARD:

- Shared on the importance of continuing the discussion on water management as this is crucial for the sustainability of the Climate Change Adaptation Project implemented with the support of NABARD. He explained how farmers can avail of loans to meet the agriculture needs so that they have timely and sufficient funds to ensure agriculture.

Discussion

After the addresses by experts and the WOTR staff, the floor was opened to discussion and questions from the participants. The following were the major points of discussion:

- **Electricity Supply:** One participant complained that he is unable to get an electricity connection for his well.
    - The response to this question came from another participant who stressed that the problem was not the recalcitrance of the local official at the Maharashtra State Electricity Board, but rather because there was a shortage of funds at the Board, which meant that they delayed the granting of new electricity connections.

- **Percolation Tank:** A participant gave the example from his village about a percolation tank that was built by the government some years ago. The problem according to him was that even if the tank filled up during the monsoon, it would be empty within a week, as all the water would drain through fractures on one side. He wished to know if there was anything that could be done to seal this
    - Mr. Shinde, of the the MPKV responded that the purpose of the percolation tank was to do just this and increase groundwater recharge.
    - The Participants responded that this was fine, but then water stored in their village was draining of and probably being used elsewhere.

- **Hydro-fracturing**: Participants enquired about the feasibility of hyrdofracturing in the Village of Sarole Pathar
    - Renie Thomas, responded that hydro-fracturing is possible, but it is necessary to first properly study the geology of the village to determine its feasibility.

Reflections

- Facilitating discussions between officials/technical experts and local community members is challenging. The session had initially been envisaged as a more interactive session. Making the leap from a lecture oriented approach prevalent amongst experts and a more dialogical interaction is necessary
- While the focus had not been on the links between water and electricity supply at the outset, the repeated appearance of questions around electricity supply suggests meeting the electricity needs for lifting water is an important issue to ensure water for irrigation. Hence this aspect should be included
- Community members have a keen interest in interventions that can transform the biophysical characteristics of their environment i.e. more structures, hydrofracturing etc. The logic that drives this is that the village has an untrammeled right over all water that falls in the village. This perception poses a challenge, as community members are resistant to notions of ecological flows between villages, particularly concerning sub-surface flows.
- While community members make a distinction between water for drinking and water for agriculture, and assert that they should assure water for drinking, this approach may ignore the causes that precipitate drinking water shortages and

Session 4: Group work

In the wake of changing climate and reduced rainfall a collective futuristic planning was needed. The present engagement was based on connecting learnings of the previous meeting that was carried out in March, which assessed the current water situation in lieu of changing climatic trends, like changes in rainfall and temperature and compare with the planning of futuristic needs of resources that will be needed to achieve a stable lifestyle. Reduced rainfall in the region makes the present community vulnerable to future climatic changes and puts adverse stresses on the socio-economic stability.

During this session, the participants divided themselves into 4 groups. The community members were grouped based on the level of access to water resources for irrigation and their usage patterns:

a. Large farmers with perennial Water Supply
b. Farmers with access to some irrigation (As this group was very large it was decided to form two groups)
c. Rainfed Farmers
d. Women

While members of the landless poor groups had also been invited, they were unable to attend as the opportunity costs associated with attending the meeting versus a day's wages were too high for them to bear. For the purpose of the meeting a group of women were treated as a homogenous group to capture the experiences of women. While there does exist considerable heterogeneity amongst women, however for the purpose of the engagement and particularly as women share about the same work responsibilities, considering these aspects it was decided to treat a group of women as homogenous. However, there were representatives of women in the other groups too.

After the group work session, each group made a short presentation on the discussion that took place. The table below summarises the presentation as well as the group discussions.

Figure 9: Group work - mapping desires with respect to agriculture

Group	Status	Goal	Possible Solution
Large Farmers with Perennial Water Supply	Water resources, as such is not a limiting factor for these farmers. The major crops among this group were pomegranate, onion and tomato; cereals were only grown for self-consumption purpose.	The goal articulated by this group were to increase the crop production quantity in such a way that the water requirements remain the same. Increase Dairy and livestock productivity They also have wished to set up processing unit for their agriculture produce to maximize agricultural production returns. They wanted to increase the pomegranate production by 3 times; onion and tomato by twice; poultry and milk by twice what they have today in the next 10 years from 2015. They also hope to use the same amount of water they are using as of now in next ten years and still achieve the above goal by using dream technologies mention in the section of required resources.	• Organic Farming • Drip automation • Poly house and green house • Processing unit • Solar Pumps • Drip/sprinkler irrigation and farm ponds for more water conservation and increased water storage facilities. • Marketing for agricultural production • Storage facilities for their products.
Irrigated Farmers	Sarole Pathar village has decided to put ban on digging new borewells. In Sawargaon Ghule there is a complete ban on borewell. In Sarole Pathar village there are 75 wells in 2015. The number expected to increase to 125 in 2035. 25 Farm ponds in 2015 are expected to increase upto 70 in 2035. These farm ponds were constructed mainly for providing	After the discussion in the group, we have drawn a graph of the possible scenario by taking into consideration the current trends. In the graph, onion crop lies in 18-20 range in the year 2015, we have also agreed upon the area on which onion is grown in our region to be 600 acres. We have projected the area under onion to be 900 acres in the year 2035 i.e. an increase of about 60%. Tomato crop is grown over an area of about 200 acres in 2015 and	• Ensuring Water Availability • Farm ponds • By 2035 no. of farmers using drip irrigation will increase to 100%. • Water Budgets at the farm level to assess the amount of water required for the particular crops sown • Market, Market rate and

	water to pomegranate plantations. However, now even kharif crops need water (due to uncertain rain), so in coming future water stored in farm ponds will be used to irrigate kharif crops.	expected to increase by 20%. The percentage of increase for tomato is less compared to onion.	Minimum Support Price (MSP) • Storage of grain
Rainfed Farmers	They see a lack of water availability as a key gap that hinders in their future aspirations of economic stability in lieu of climatic changes.	There is a need for increasing the number of open wells and farm ponds. If the supply side can be enhanced the farmers were looking forward to both, buy more land and bring it under cultivation. Majority were looking forward to cultivate pomegranate, onion and pulses.	There should be a total ban on the use and drilling of borewells.
Women	The women shared that the cropping pattern over the years has changed drastically. The inclination towards cash crops has led to a decrease in food crops. Farmers now are taking more cash crops like tomato, onion, vegetables, pomegranates and very little food crops like pearl millet, horse gram, pigeon pea, moth bean, black gram, sorghum and wheat. With respect to the water availability for agriculture, women shared that the number of wells, farm ponds and drip irrigation has increased substantially over the years and is expected to rise in the coming years. Increased use of chemical fertilizers and pesticides has led to rise in	Women expressed their concern about the declining nutritional status among people as a result of changing cropping patterns. When asked about good health, the women agreed on three levels viz. Good (Changla), Normal (Sarv sadharan) and Danger (Dhokhadayi). The determinants of the health levels are as follows: • Good: High availability and nutritional content of food crops • Normal: Low production of food crops but needs are supplemented by markets • Danger: Lack of food grains and vegetables	Women were given two scenarios related to crop preferences. In the first scenario, where they had access to adequate resources required for farming, the women showed keen interest on growing both. However, the second was that of resource scarce scenario. Here women chose to grow more cash crops as compared to food crops as they bring in more income.

	human diseases. Exposure to the chemical sprays lead to irritation of skin. The impacts of such nutrient deprived diet as shared by women are low stamina, weakness and joint pain.		

Session 5

During this session participants shared their experiences in water management. Participants from the villages of Mhaswandi and Sarole Pathar shared their village's experiences in managing their water resources. This session sought to achieve the following (For transcript of the same, see Appendix 3):

- Demonstrate that Water Resource Management is possible and in fact present in the area
- The diversity of social and institutional responses available to communities, i.e. there is no one size fits all solution or panacea to the problem, but that many solutions can and must be locally evolved in an inclusive manner in order to ensure that they are effective and sustainable.

Figure 10: Mr CB Gule speaks about his village's experience with water governance

Way forward

The stakeholder engagement process is an evolving process and at this stage to speak of "conclusions" is to get ahead of oneself. This section briefly articulates the learnings from the Stakeholder Engagement (ShE) process so far, the interplays between the ShE process and the research projects and the potential ways forwards.

Learnings from workshop 1 and 2

- Farmers see the unequal distribution of water in the village as a natural fact. There is also tremendous legitimacy associated with the need for groundwater.
- Farmers see access to water as the only means to agricultural prosperity and therefore invest heavily in the wells and farm ponds.
- Communities wish to conserve as much water as they can within the boundaries of their village, through interventions such as check dams and even Hydrofracturing. Considerations of ecological flows and inter village flows are sidelined
- Community members are more willing to approach the Water Governance problem from the perspective of ensuring access to reliable water for domestic and drinking use. However
- Marginalised groups tend to be under-represented at workshops
- Villages like Sarole Pathar, and most recently Sawargaon Ghule, have been able to enforce bans on the sinking of bore wells, other villages like Varudi Pathar have also tried, but have been unable to do effectively enforce it. While some villages never even attempted such a measure. This situation begs the question, what is it that allows some villages to coalesce collective action around the question of water governance while others try and fail, and some do not even make any attempts.

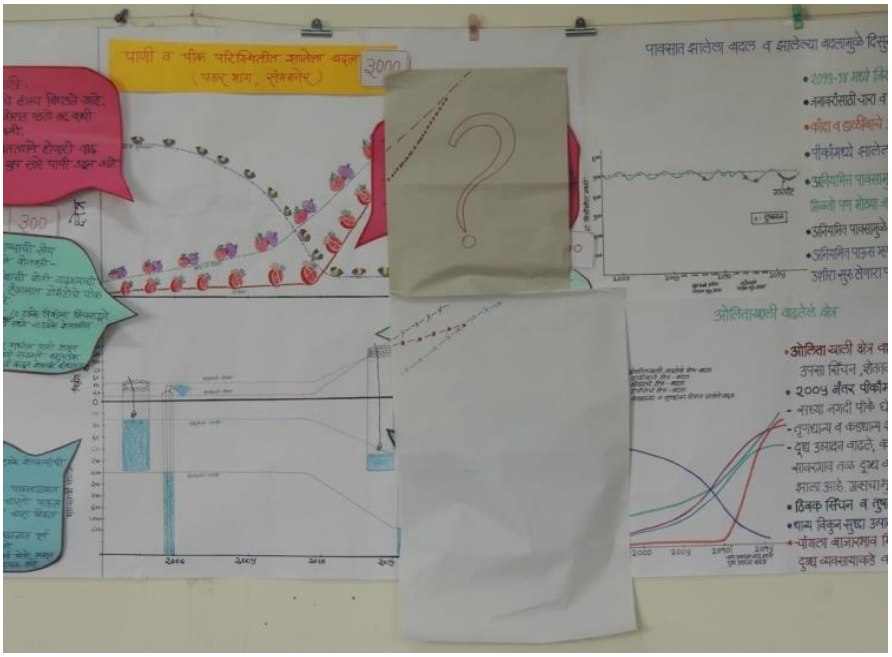

Figure 11: The big question: For how long can business as usual continue?

Regional research programme (RRP), Research-into-Use (RiU) and stakeholder engagement (ShE)

At the most local level, the research from the research studies, e.g. water governance (farm ponds), agro-meteorology and vulnerability assessments will both inform and be informed by the stakeholder engagement process. Furthermore, by generating local specific information and knowledge, the findings of the research projects will be relevant to, and can be incorporated into, local action adaptation plans - one of the goals of stakeholder engagement process.

The processes developed, particularly vis-à-vis water governance, will mean that the findings of the ASSAR project could provide practical and relevant policy recommendations in the context of water governance in Maharashtra and the country.

Learnings from the RiU workshop

In August 2015, Oxfam conducted an RiU workshop in Bangalore for the South Asia ASSAR team. The workshop was a stimulating experience and nudged the participants to think with clarity on how we envisaged the research programme unfolding from the perspective of RiU as opposed to research for its own sake.

Key learnings

- Evidence is not the only, or even the main, influence on decision-making; it is merely one factor informing decisions in relation to policy and practice change.
- Stakeholder mapping and power analysis: Prior to the workshop there was a tendency to view stakeholder mapping as more of an inventory exercise, with no particular end in mind. However, the approach to stakeholder mapping and power analysis enables a more focused and outcomes-oriented approach to the activity.
- There is a need for a strategic and targeted approach to stakeholder engagement in the context of the dissemination of research findings and influencing policy.
- Multi-stakeholder processes: A multi-stakeholder process does not mean that all the stakeholders have to be in the same room at the same time. Engagement with stakeholders and stakeholder groups should be made, while keeping in mind the power dynamics and practicality. Approaching the ShE as a multi-stakeholder process, allows us to target stakeholders placed at various scales of governance. This considerably expands the scope of the stakeholder engagement process.

Next steps

- Transformative Scenario Planning: As the stakeholder engagement process unfolds, the water issue appears to be an increasingly "stuck" problem.
- Multi-stakeholder processes: Taking a view of the ShE as multi-stakeholder process will enable us to link the local to engagements at higher levels, in a coherent manner
- There is a need to address the problem of low participation of marginalised groups.
- It is important to understand why some communities are able to successfully enforce measures for water governance while others are unable to do so. This would provide insight into the processes and factors that foster collective action around water resource management.
- Our research findings should be fed into the ShE process.

Appendices

Appendix 1

List of Villages

Village Meetings

- Sarole Pathar
- Mahalwadi
- Malegaon
- Sawargaon Ghule
- Jawale Baleshwar
- Warudi Pathar
- Gunjalwadi
- Karjule Pathar
- Vankute
- Bhojdari
- Pemrewadi
- Khothe Bk
- Khandgedara
- Borban
- Darewadi
- Kumbharwadi
- Satichiwadi

Appendix 2

Vulnerability Assessment

Climate Risks

1. Delay in Monsoon
2. Long Dry spells during the monsoon rains
3. Unseasonal Rainfall
4. High Intensity Rainfall of short duration
5. Long duration of summer with increasing temperatures

Impact of Climate Risks

Agriculture	People	Livestock
Unseasonal Rain		
1. Reduced crop production 2. Damage to standing crops 3. Increase in pests and diseases amongst crops **4.** Increased run off as trees around farms have reduced	5. Loss of employment, mainly due to loss of agri-wage labour opportunities 6. Increasing debts 7. Economic losses 8. Food grains scarcity 9. Drinking water scarcity 10. Increased incidences of human diseases	1. Increased incidences of livestock diseases **2.** Fodder shortage
High Intensity rainfall for short periods		
1. Soil run off due to lack of trees and bunds as land has been flattened 2. Damage to standing crops 3. Damage to water harvesting structures and crop storage structures 4. Increased incidences of crop pest attacks	1. Damage to the houses 2. Increased incidences of human diseases like common cold, malaria, diarrhoea, etc especially among children	1. Increased incidence of livestock diseases and mortality 2. Fodder shortage 3. Damage to animal shelters
Long dry spells		
1. Crop production reduced 2. Crop growth affected 3. Water availability for	1. Increasing debts due to huge economic losses 2. Food grain scarcity	1. Lack of sufficient and quality fodder and feed 2. Lack of water reduces

irrigation decreased 4. Reduced soil moisture	3. Drinking water scarcity 4. Incidences of human diseases increasing 5. Lack of wage labour in village mainly due to loss of agriculture.	3. Fodder shortage 4. Incidences of livestock diseases increased due to lack of nutrition
Delay in Monsoon		
1. Seeds do not germinate, Nil or poor crop yield 2. Water scarcity for irrigation 3. Reduced soil moisture 4. Increased incidence of pests in crops	1. Drinking water scarcity 2. Loss of income 3. Shortage of food grains 4. Loss of employment 5. Lack of wage labour in village 6. Increased drudgery for women - walk far to fetch water	1. Drinking water scarcity 2. Fodder shortage
Increased duration of summer/Increased temperatures		
1. Productivity reduced due to loss of soil moisture 2. Grain of poor quality 3. Damage to crops, affect crops at various growth stages 4. High evaporation	1. Increased incidence of livestock diseases 2. Decrease in milk production 3. Fodder shortage	1. Illness and deaths due to sun stroke 2. Increased expenditure on health 3. Shortage of drinking water due to drying up of wells

Coping Mechanism

1. Migration in search of work- mostly agri wage labour
2. Depend on PDS for food
3. Purchase food crops from markets
4. Purchasing fodder from market
5. Take loans and credits- mostly from informal credit systems
6. Increased usage of fertilizers to enhance the productivity
7. Increased digging of bore wells
8. Construction of farm ponds
9. Change in cropping pattern like some farmers take onion in Rabi season
10. Drip Irrigation
11. Crops sown on beds which are covered with mulching paper

Appendix 3

Testimonials

Dilip Satkar, Mhaswandi

I feel I am fortunate that I could attend this workshop. What we have discussed today, in 1994 WOTR started work in Mhaswandi our village and in adjacent Bhojdari. WOTR worked at capacity building where as Sugar factory worked as an NGO. In the year 2000 when work was completed, we were told about how to do the planning / budgeting of water. We put to use that the planning at different levels in the field of water management, co-operation etc. We thought about it as a man or woman - how to fulfill one's family needs. SHGs are functioning well since 1996 to current date. Now there are 38 active SHGs present in this tiny village.

When it comes to Water budgeting, I would like to share an incident that happened this year. Last year we had a water shortage. We took a Gram sabha to deal with the problem of irrigation of crops after the onion crop (i.e. tomato and other horticultural crops). A resolution was passed that even if water in the wells is available for a group of 3-4 farmers, farmers will have to use drip irrigation. Because of this there is 5% increase in the well water. There was water available during the whole summer. We have experienced such water budgeting exercise through WOTR as well as with the support of the Sugar Factory. If we plan properly, villagers wouldn't face in problems be it money or water.

In Mhaswandi we have been implementing these water management strategies for all these years. We, all men and women, need to be aware of them and actually implement them. This is possible when likeminded people like us come together and work together with poor. Each of us needs to come together to think and plan, so that our villages can flourish. It's not a big deal if a single person becomes rich, however it is important that economically weak members of the community become prosperous. When it happens, it will indeed be a moment of pride for us.
I just want to end my speech with this verse, "We all are born from the earth; we live of the earth. While living we can also help fellow beings become happy. We need to abstain from envy, hatred, anger, greed while we live our lives helping others."

C.B. Gule, Sarole Pathar

Our problems are similar thus we have to find the solutions together. Earlier the rainfall was good, over 500 mm a year; but it is not so now. The situation seems fine now especially in Sarole Pathar but when a situation arises we have to face it together.

When we started working on watershed issues in 1995 people weren't aware of the need for collective action. Then we carried out awareness generation activities and people started to understand the concept of shramdaan. It was followed by constructing and treating the watershed which resulted in increased water levels. People started thinking that this situation should be maintained and came up with decisions like prohibiting the digging of borewells. After taking this

decision people noticed that the water levels have increased and there was surplus water for agriculture too. The financial situations of people improved.

In other villages people who owned up to 5 acres of land, with the help of government policy, constructed their own borewells. There were 25 borewells at that (1995) time which rose to 100, which means that people constructed 75 wells with their own money.

But in Sarole Pathar there is water at 40 feet. Thus in Sarole Pathar, if you ask the women, they will say that earlier they had to fetch water from far but now the water is at their doorsteps. Thus to give our future generation a good platform one must think about this. Thus everyone must take a conscientious decision regarding the construction of borewells. Instead of just focusing on your agriculture if you decide to solve the drinking water problem it will be beneficial in the long run. If I am not wrong people have constructed 50 borewells this year out of which only 2-3 have sufficient water. Thus drinking water must be made a central theme and people have to be sensitized and organized around it. Then we must decide how to use it and for what purposes while prioritizing its use in a judicial manner. I request you to think about this when you go back to your villages. Thank you.