CGIAR Research Program on
Climate Change, Agriculture and Food Security (CCAFS)

Village Baseline Study: Site Analysis Report for Mid-Western Terrai, Rupandehi, Nepal (NE0336)

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The tools and guidelines used for implementation of the village baseline study across all CCAFS sites, as well as the mapping outputs at a higher resolution can be accessed on our website (http://ccafs.cgiar.org/resources/baseline-surveys).

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This Paper has been prepared as an output for the baseline activities under the CCAFS program and has not been peer reviewed. Any opinions stated herein are those of the author(s) and do not necessarily reflect the policies or opinions of CCAFS.

Abstract

This is the report of the village baseline study of Madhuri Village in the CCAFS benchmark site of Rupandehi, Nepal conducted from June 5-9, 2011 to complement an earlier household baseline survey done in the same village.

Madhuri is located in the fertile area of the Indo-Gangetic Plain in Nepal yet faces challenges due to increasing populations, encroachment on forests, decreasing soil fertility, limited agriculture and animal productivity, lack of opportunities, and variable climatic conditions. Its circumstances present manageable opportunities to prevent an increase in food insecurity and further degradation natural resources. Madhuri has yet to incur any food or environmental crises.

Men and women identified 22 organizations supporting agriculture production, microfinance, irrigation, community development, infrastructure, and natural resource management (NRM). Most organizations worked in food security while only a few government entities worked in NRM. The majority of the organizations are community based and comprised of cooperatives, local government agencies and district government offices. External organizations were not operating in the village. Groups questioned the effectiveness of the assistance and noted limited coordination outside of government entities.

The groups identified 10 sources of information on weather, fertilizer, seed and livestock. The most popular types of information sought were on fertilizer and seeds while the most frequent sources are friends, relatives, radio and television. Other popular sources are neighbours, agro-vets and trainings. Access to this type of information was high, however the usage and utility was less clear.

Recommendations focus on improving soil fertility, revitalizing forests, expanding fuel sources, increasing agricultural productivity, and supporting education and opportunities. Increased coordination, expansion of efforts, and linkages with additional resources are envisioned to help local organizations improve their effectiveness and community impact. Opportunities also exist in action research to better understand and address climate change's impacts given Mahduri's conditions and dynamics.

Keywords

Baseline; Nepal; village study; participatory mapping; organisations; access to information

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Introduction

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic ten-year partnership between the Consultative Group on International Agricultural Research (CGIAR) and Future Earth to help the developing world overcome the threats posed by a changing climate, achieve food security, enhance livelihoods and improve environmental management. In 2010, CCAFS embarked on a major baseline effort at household, village and organisation levels across its three target regions, namely East Africa, West Africa and South Asia (more information about CCAFS sites is available on our website http://ccafs.cgiar.org/regions). CCAFS trained survey teams from partner organisations in the three regions to conduct the baseline.

The baseline effort consists of three components – a household survey, village study and organisational survey. The household baseline survey, a quantitative questionnaire on basic indicators of welfare, information sources, livelihood/agriculture/natural resource management strategies, needs and uses of climate and agricultural-related information and current risk management, mitigation and adaptation practices, was implemented by CCAFS partners in 35 sites (245 villages) with nearly 5,000 households in 12 countries to date. CCAFS partners are implementing village baseline studies (VBS) and organisational surveys in one out of the seven villages within each CCAFS site where the household survey was implemented. The plan is to revisit these villages in roughly 5 years, and again in 10 years, to monitor what changes have occurred since the baseline was carried out. The goal is not to attribute these changes to the program, but to be able to assess what kinds of changes have occurred and whether these changes are helping villages adapt to, and mitigate, climate change.

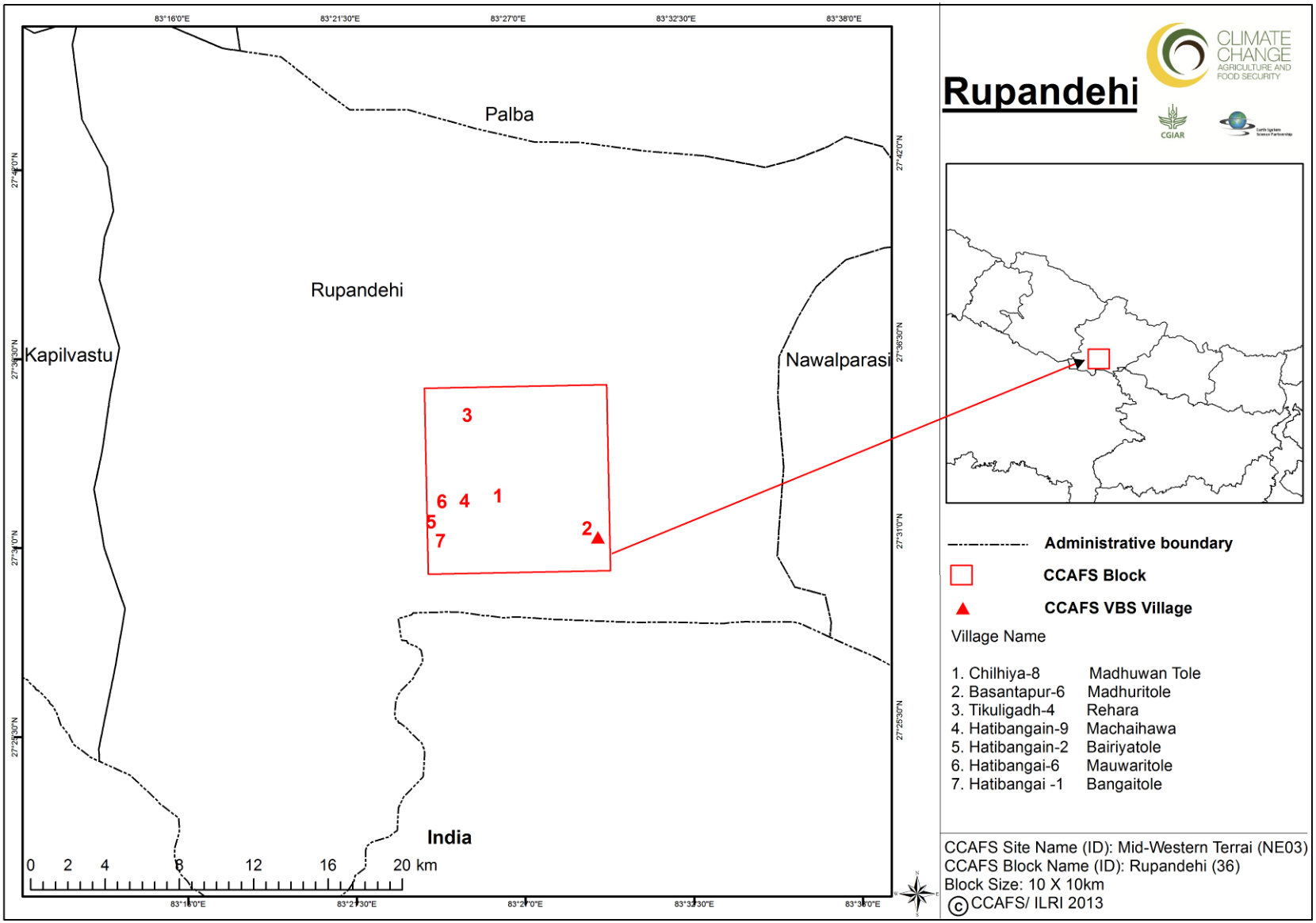
The focus of this site analysis report is the VBS. To date, seventeen VBS were conducted. The VBS aims to provide baseline information at the village level about some basic indicators of natural resource utilisation, organisational landscapes, information networks for weather and agricultural information, as well as mitigation baseline information, which can be compared across sites and monitored over time.

The objectives of the VBS are to:

- Provide indicators to allow us to monitor changes in these villages over time. In particular, changes that allow people to
    - Manage current climate risks,
    - Adapt to long-run climate change, and
    - Reduce/mitigate greenhouse gas emissions
- Understand the enabling environment that mediates certain practices and behaviours and creates constraints and opportunities (policies, institutions, infrastructure, information and services) for communities to respond to change
- Explore social differentiation:
    - Perceptions of women and men will be gathered separately to be able to present different gender perspectives.
    - Focus group participants will be selected to present perceptions of groups differentiated by age.

The detailed tools and guidelines used for the implementation of the VBS across all CCAFS sites, as well as the manuals, data and analysis reports can be accessed on our website (http://ccafs.cgiar.org/resources/baseline-surveys)

Map 1. Location of the Madhuri village in the CCAFS benchmark Rupandehi site, Nepal



This report presents the results of the VBS conducted on June 5-9, 2011 in the village of Madhuri, Nepal (Rupandehi site) (Map 1). Madhuri is located in Basantapur VDC in the Rupandehi district. It is situated in the fertile flat land of the Indo-Gangetic Plain in Nepal. The village has access to roads, electricity and communication. The district headquarters is about 3-4 Km away from Madhuri. The Basantapur VDC-6 Madhuri location was selected for the village survey following completion of a household survey at the same site and because of its relative central location in the block. The survey team was composed of two facilitators, two note takers and two translators. Each pair was male and female. Consultations were made with the village authorities concerning time and place of meeting. They selected an appropriate venue in Madhuri for the meeting.

Invitations were sent out by the site team leader to three sets of participants who were chosen using random sampling. Each group was composed of 15 men and 15 women. Three consecutive days were selected for the survey and on each day only one set of participants were expected to participate in the survey. The whole community was invited on the first day of the survey for an introductory session where this survey was explained to and results of an earlier household survey shared. After the introductory session the rest of the community was set free and only the invited group of 15 men and 15 women remained behind to carry on with the survey. This was repeated at the end of the third day when the survey was completed. The whole community was again invited to attend a debriefing session where summaries of the findings were shared.

The survey used participatory methods of data collection. Throughout the data collection process groups of male and female members of the community worked separately. This was to allow for collection of gender-differentiated information.

The task on day one was to introduce the community group to a satellite image of the block and work with each group to identify and map/sketch resources that are important to the community, their current state, their past state and what caused the changes. The outputs were maps and sketches. The process of working with the community to identify the resources that are important to them depended entirely on how well they were able to understand and interpret the image.

The task on day two was to work with each group to understand the organisational landscape and the links that exist between the organisations in relation to food security in a normal year, in a year of crisis and in relation to natural resource management. The outputs were diagrams showing the organisational landscape. Information on each organisation was also captured cards. The links between the organisations were shown using lines and arrows on the diagrams.

There were two main tasks on day three. One was to work with each group on understanding information networks in relation to weather elements and farming activities. The outputs were diagrams. The second task was to bring the two groups together and generate a vision of what the community would like their village to be like in the future. The output was a map/sketch showing "the vision of the community."

Information generated from the survey was captured on sketches, maps, flip charts, information cards and notes, which were brought together in an initial debriefing and ultimately this final report. Photographs were also taken of all the activities and information generated at each stage. The survey materials were then labelled and packed for off-site processing. The debriefing report was prepared in the field so that it could benefit from the presence of the site team. The photographed sketches and maps were inserted in the debriefing report. In this site analysis report proper maps and diagrams derived from the field outputs replaced them.

Data analysis

Topic 1: Community resources – participatory satellite imagery interpretation and visioning

Community infrastructure and resources and gender-differentiated access and utilisation of those resources have been analysed, based on a process of participatory visual interpretation of high resolution satellite imagery (RapidEye). The aim was to create a basic understanding of existing community resources, as well as of community dynamics in relation to its environment. The participants discussed the current state of those resources, in terms of quality, access, management, history and potential drivers of change. Later on, a mixed group developed an image of village resources and human well-being into 2030 to understand opportunities, constraints and aspirations for the future. The detailed approach to this exercise is outlined in the CCAFS Village Baseline Study Implementation Manual (follow the link to the baseline study from our website http://ccafs.cgiar.org/resources/baseline-surveys).

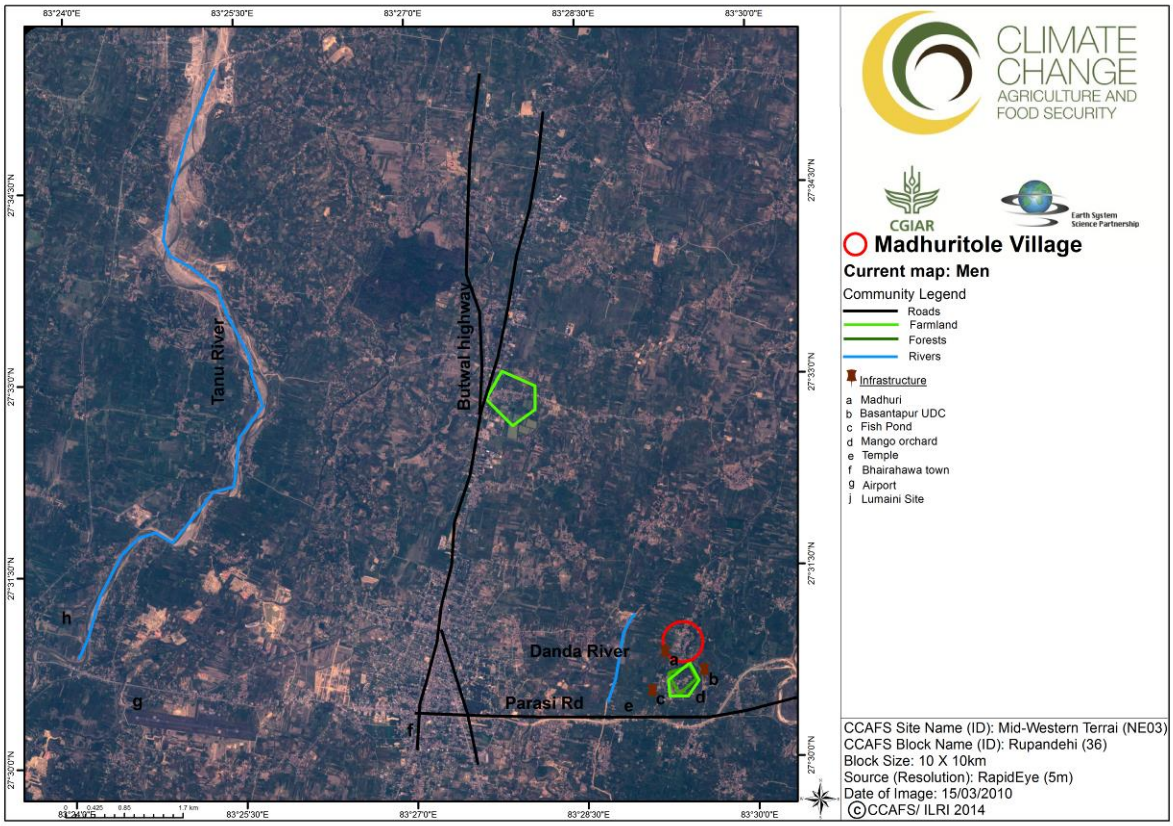
A. Current resources

Separate meetings of male and female participants took place in Mahduri. To begin the identification of community natural resources and infrastructure, groups generated initial diagrams on the floor as a basis for discussion and consensus before final versions were transferred to flipcharts by the research team (Photo 1). Following this activity groups were shown satellite imagery of their region to compare and confirm their maps. The appreciation of scale was important for participants to get their bearings. The exercise could not be rushed and took a few minutes, but both groups were ultimately able to identify key features from the images.

Photo 1. Current conditions mentioned by women regarding natural resources and infrastructure

Maps 2 and 3 represent the current conditions in the community regarding natural resources (water, forest, grazing, farmland, degraded land) and infrastructure (roads, markets, education, health) according to, respectively, male and female participants. The maps lay out information prepared by the community participants super-imposed on a satellite image.

Map 2. Men's map of current community resources



Map 3. Women's map of current community resources

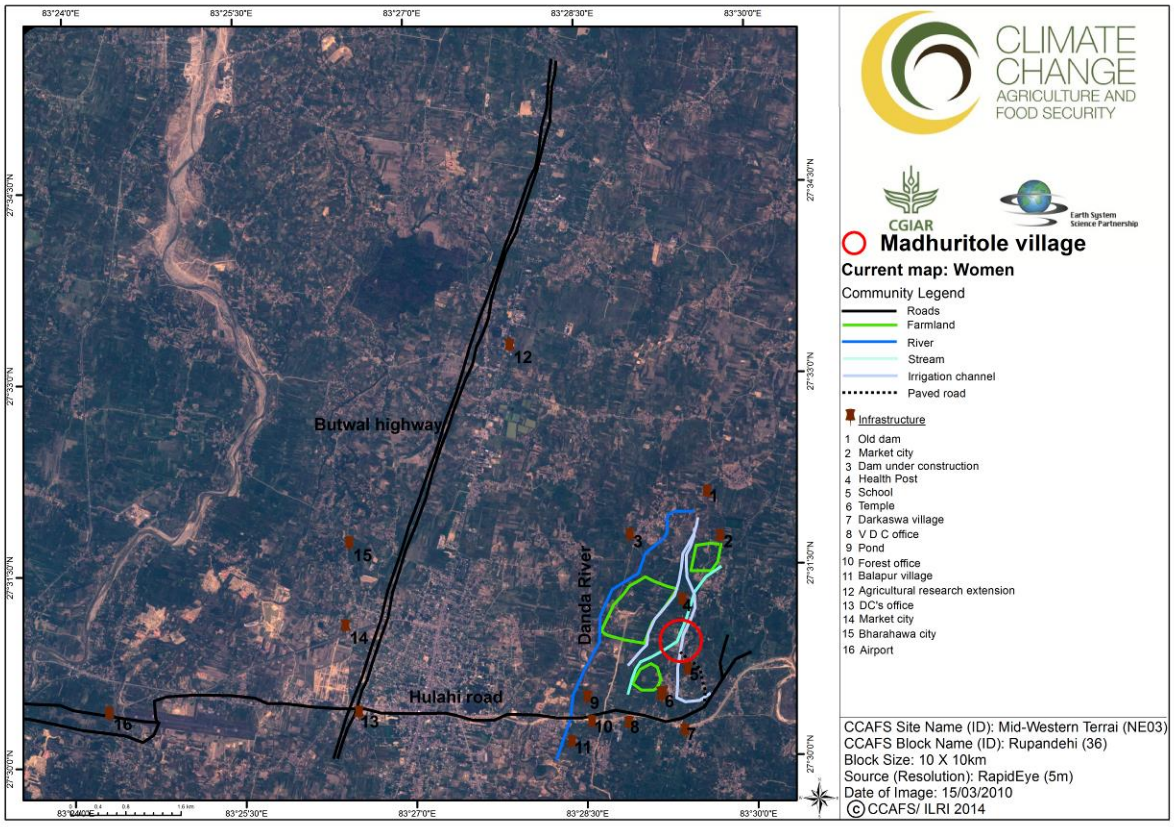


Table 1. Summary for Layer 1: current conditions, as perceived by men (M) and women (F)

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Mgmt and ownership issues	Environmental Benefits	Opportunities	Limitations
Forest (M)	Materials for house construction. Firewood	Madhuri	There is no community forest. Limited private forest in the areas	20 minutes on foot	Private	Source of rainfall	Wood for fuel and construction	Farm owner restrictions
Forest (F)	Some forest (sisso) at the river basin is not much use	Near Danda River	Trees approaching fully grown stage	30 minutes -1 hour depending on season	Government			
Orchards (M)	Fruit production of mango (mostly) and banana	Madhuri	Productive stages	10 - 30 minutes	Private. Permission not needed	Holds soil and provides oxygen	Currently all production for home and little extra available for sale	Poor soil fertility and low productivity
Farmland (F)	Farming of rice, wheat, oilseed (tori), vegetables such as potato and tomatoes, and fruits such as mangoes and bananas	Near and within village	Low fertility	5 - 60 minutes	Community	Agriculture	None	Low productivity
Farmland (M)	Farming of rice, wheat, oilseed (tori), vegetables such as potato and tomatoes, and fruits such as mangoes and bananas	Basantapur VDC	Low soil fertility	10 - 30 minutes by foot	Private	Trees on farmland bring rain	Food	Soil fertility in decline due to no use of manure and compost.
Grassland (F)	No grassland or grazing land as such. Cattle fed by grazing in fields during on and off cropping seasons	Near fields	Due to monsoon season the area for grazing is green.	5 minutes – 1 hour	Whoever owns the land uses the grassland			
Degraded Land (F)	Barren land around river	Near Danda River		30 - 60 minutes				

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Mgmt and ownership issues	Environmental Benefits	Opportunities	Limitations
River (M)	Fishing and irrigation	Danda River and Rohini River	Encroaches farmland during rainy season, but not a severe problem	30 - 60 minutes on foot	Resource for all but nobody takes responsibility		Water to irrigate farmland and source of fish	No access during the construction of canal dam
River (F)	Danda River used for irrigation	Near Basantapur VDC office and close to some of the fields	Dry, lowest water volume of the year. Rive is rain fed and volume decreases during dry season	30 - 60 minutes	Nobody owns	Irrigation and fishing		
Roads (M)	Transport	Bhairahawa-Butwal (N-S), Bhairahawa-Parasi (E-W) road, and Bhairahawa-Sunauli (India)	Good	15-30 Minutes By vehicle	Government		Potential to expand products marketing	Due to political instability, government has less ownership
Roads (F)	Transport	Bhairahawa-Parasi (Hulaki), Bhairahawa-Butwal, and Bhairahawa-Sunauli	Under operation and in good condition.	15 minutes	Government			
Market Centre (M)		Bhairahawa, Butwal and Sunauli	Expanding with time	15, 60 and 30 minutes by car	Villagers	Source of household products	Markets for selling farm goods and employment	Not under the local authority. Little income opportunities for the community
Canals (F)		Very close to village in the north and south	Dry during dry season otherwise useful	5 minutes	Government	Irrigation and graze land	With sufficient water, aids in agriculture	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Mgmt and ownership issues	Environmental Benefits	Opportunities	Limitations
Canals (M)		Madhuri, to the east and west	Poor	20 - 30 minutes	Managed by village	Higher crop production	More income for village	Costly to maintain annually
Ponds (F)		One between Madhuri and Matariya	Jyoti pond good, however the government managed pond is dry	10 – 15 minutes	One managed by Jyoti Club and the other by the community	Fish rearing, wallow, fire extinguishing and irrigation		
Dams (M)		North of Madhuri	Normal to poor	1 hour	Managed by the Irrigation Office in Bhairahawa	Higher crop production	More income for village	No priority by the Irrigation Office for its maintenance
Dam (F)		Older one next to the Hulaki road	One under operation another under construction	1 hour	Government	The one in operation aids in agriculture		The one under construction will hamper agriculture
Bridge (F)		On highway	Operational	20 minutes	Government			
Health Post (M)		Madhuri	New and in very good condition	5 - 10 minutes	Managed by Health sector and VDC		Treatment of common diseases and bed for 10 patients	No big hospital and many services not available
Health Post (F)		Madhuri	Functioning well	10 minutes	Government			
Schools (M)	Lower secondary school	Madhuri	New and in very good condition	10 -15 minutes	Managed by committee	Education brings prosperity to the village	Villagers will know what and what not to do	No high school or higher education options
Schools (F)		Madhuri	Functioning well	10 minutes	Government			

Male and female participants provided the following information on their community's resources, including infrastructure (building on Table 1).

Forest: There is no public forest in the village and the small patches of existing forest around the village are private orchards and of limited community use. There is a forestry office for the village, which has not been successful in providing services to the village.

Water: There are two rivers in the village - Danda in the west and Rohini in the east. The rivers are mostly used for irrigation and fishing. During the rainy season the rivers encroach on farmland, however this is not a serious problem. There are other sources for irrigation like irrigation canals, subsidiary canals and streams but none of them are in proper form. There are two dams in the village, one of which is under construction to the north of old dam and the other under operation at the Hulaki road / Bhairahawa-Parasi High way. There is also a bridge on the highway over Danda River that is government managed and in good condition.

Farmlands: The farmlands in the Madhuri are generally used for cultivation of rice, wheat, oilseeds, pulses, vegetables, and fruits. Most of the area in and around Madhuri is farmlands, which limits space available for livestock grazing. Livestock is allowed to graze in the fields when they are not in use and fed hay/straw. Major types of livestock are cow, buffalo, chicken, goat and oxen.

Markets: The main market centres for the village are Bhairahawa, Butwal and Sunauli, which are expanding with time. The market centres do not offer many options for the villagers as they don't produce enough to sell the excess. In addition, the centres lack houses to rent and factories or other sources of employment options for the community.

Roads: There are various roads in and around the village. The main ones are the Bhairahawa-Parasi road located near the village and often mentioned as Hulaki road, the Bhairahawa-Sunauli road that connects to India, and the Bhairahawa-Butwal road that links to the East-West highway in the north. These are all newly pitched and good roads, whereas the road inside the village is unpaved and rough.

Health: There is a well functioning health post in the village that provides basic health care, maternity services, vaccinations, etc.

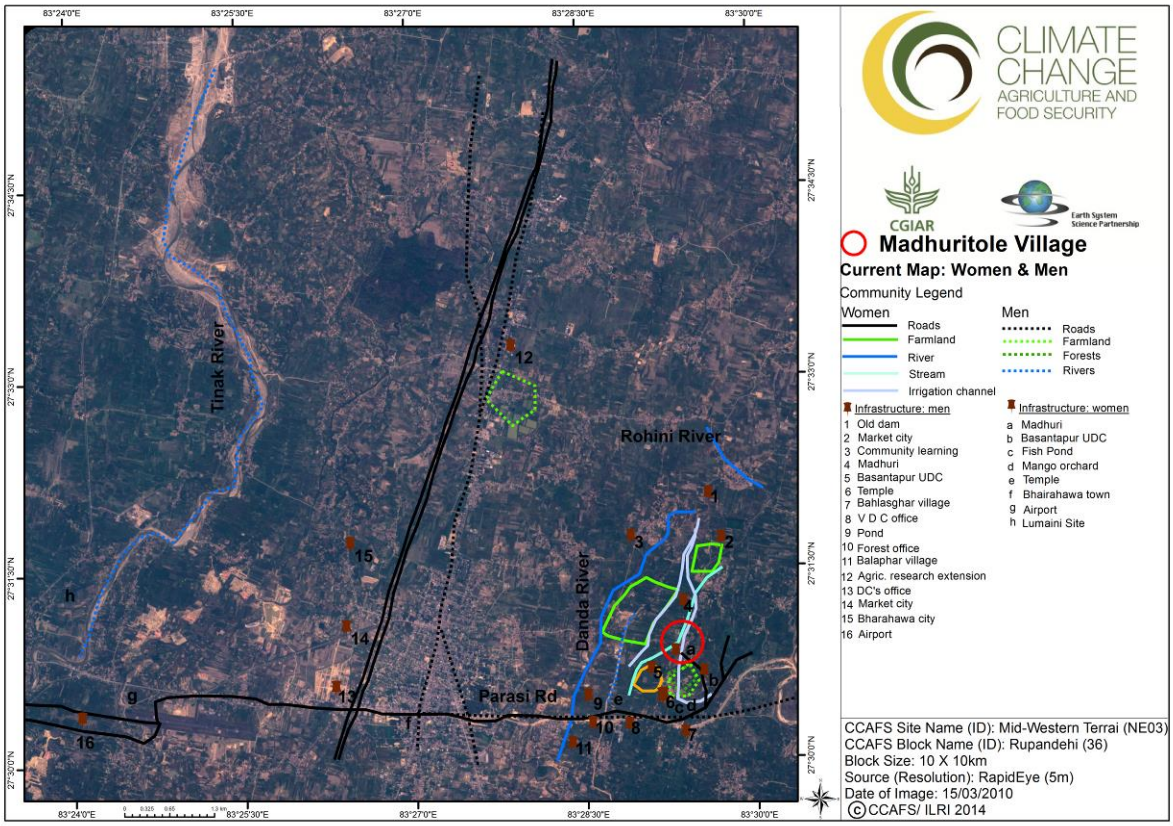
Schools: There is a lower secondary school in the village. For higher studies the villagers send their children to Bhairahawa or other towns and cities.

B. Gender-differentiated comparison of current conditions

As seen in the table above it is evident that there are significant differences and some similarities between the male and female members of the village. In the women's group there was a general perception that men know more than women. The community living in the village are the Tharu, who are regarded as one of the communities in Nepal where women are less suppressed and have higher gender equity. Even so, the literacy rate among the male and female participant was significantly different. Almost 40 % of the participating women were illiterate and most of those who were called literate could barely read and write. Although the condition of the Tharu women in Madhuri is better than most villages, their potential is still limited to household chores. There were instances of families letting daughter-in-laws finish their studiers but that was not always the case.

Men and women noted many of the same resources, such as forest, canals, dams, roads, heath post, and school. Each group highlighted different ones as well, often making different distinctions among land, water and infrastructure resources. For example, both men and women noted farmland but men also cited orchards while women cited grasslands and degraded lands. Women also noted the bridge and ponds as community resources while the men did not. In addition, the groups had more knowledge of certain resources, such as the women's group talked a lot about the health post as it has provided maternity services whereas the men's group hardly mentioned it. Men actively participated in discussions about the roads and markets however the women were hesitant and seemed unconfident. Most women have not travelled beyond Bhairahawa. Men and women had conflicting views over the dam under construction, with men seeing nothing wrong with it and arguing it will only aid with irrigation, whereas the women seemed apprehensive about it and thought it would waterlog the fields and hamper agriculture.

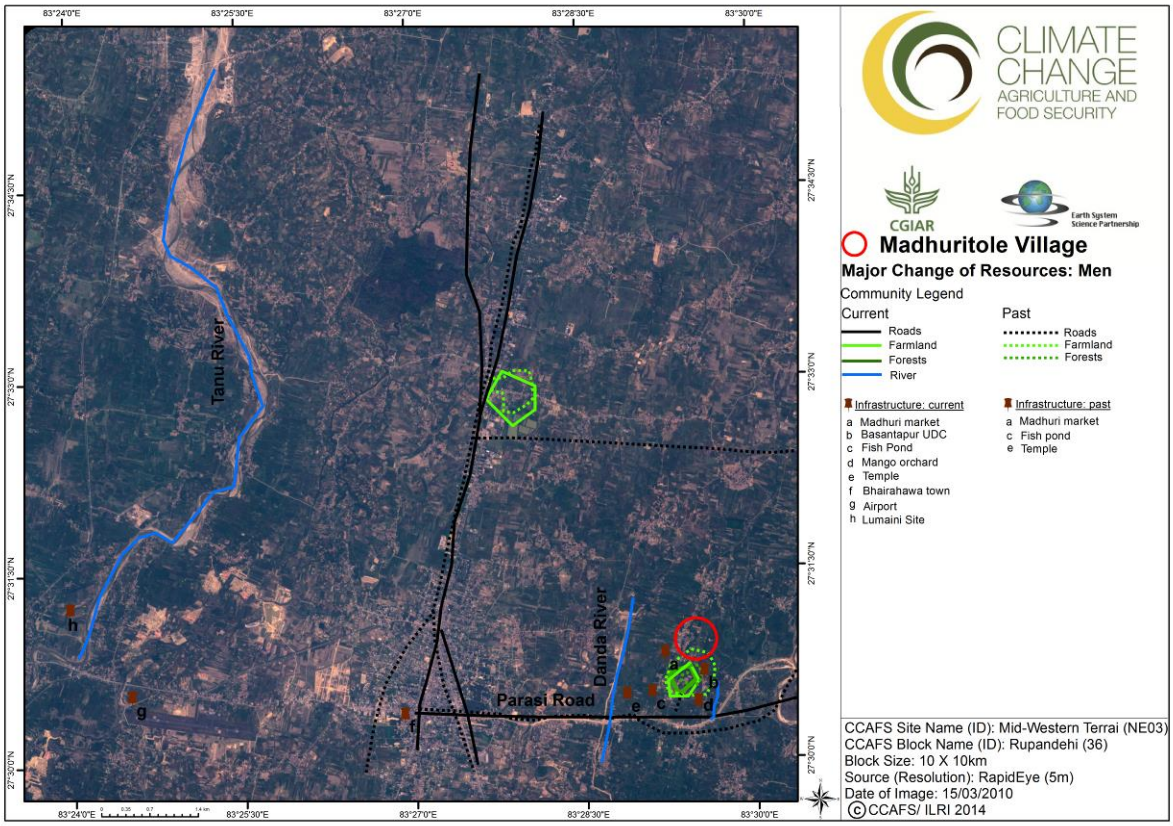
Map 4. Overlay of current conditions, comparing men's and women's maps



C. Major changes of resource conditions

Maps 5 and 6, and Table 2, show the most relevant changes in community resources as expressed by male and female participants. The major changes for the men and women of Madhuri were the state of forests, farming dynamics and some infrastructure. The major change in the forest was that it was much denser in the past and inhabited by various animals. The forest accounted for timely rainfall and the flow of water from the forest made the farmlands fertile. Now the areas that were previously forested have been converted to farmlands, which participants speculated might be the reason for less rainfall and increased soil erosion. The river previously had higher volumes of water and its banks had more trees, shrubs and bushes. The farming and vegetation in the past was much richer as there used to be more favorable conditions for farming. In terms of infrastructure, there have been improvements as before there were no roads except for the Bhairahawa- Butwal road and Parasi-Sunawal Highway (Hulaki road), but there are now more options and better conditions. The main drivers for almost all the changes in resources are increases in population, decreased soil fertility and increasing contact with urban states. Increases in population have increased the demand for food, shelter and other life requirements, which have resulted in deforestation and lower food security. While the men had plenty to say in terms of changes in resources, the women had very little information mainly because most of the women came to the village only after marriage. Some older women spoke on the state of the past but they were unable to comment on the drivers of change.

Map 5. Major changes in resources (comparing past and present) for men



Map 6. Major changes in resources (comparing past and present) for women

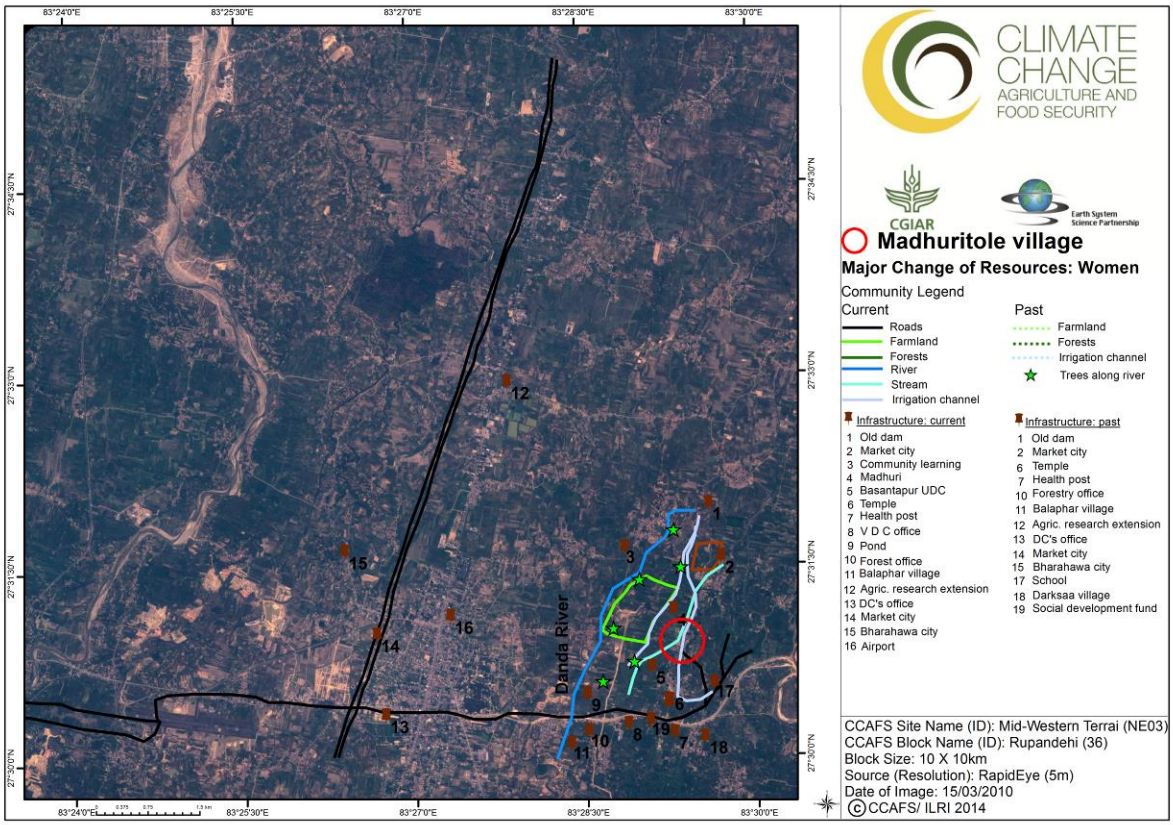


Table 2. Major changes and drivers of change in the last 10 years, as perceived by men (M) and women (F)

Land cover class	Past state (quality)	Drivers of change	Management and ownership issues	Environmental Benefits
Forest (M)	Dense forest with wild animals	Population pressures brought increased demand of farmland for food and construction materials for shelter	Land used as a private farm. It is registered in the land revenue Office.	Plenty of rainfall before as well as pasture for livestock. Farmland soil was fertile and there was plenty of food
Forest (F)	Previously there was a significant forest near Danda River and some orchards	Increase in population density and migration	None	Firewood
Rivers (M)	Forest used to be dense and there was more and timely rainfall. The water coming from forest was more fertile for crops	Converted forest to farmland, which resulted in less rainfall. Less decomposition of materials during floods has decreased soil fertility	Free for all	The grasses and bushes along the riverbanks had less soil and water erosion. They used grasses for roofing materials.
River (F)	Danda River used to have a higher volume of water		None	Irrigation
Farmland (M)	Was a beautiful area. There was some local fish catching in the local ponds and the deep rice paddy planting areas. Land holdings were bigger	Uncontrolled deforestation. Population pressure leading to more construction. Lack of employment leading to exploitation of forest resources as alternative source of livelihoods	Free for all. The area used to be privately owned by rice cultivators	
Roads (M)	The Bhairahawa –Butwal (North South) road previously did not exist. The Parasi to Sunawal Hulaki road (Postal Road) was the main official route then linking the districts together	Population pressure and lack of maintenance	Owned but not maintained by the government	Market opportunities and other public and private needs
Roads (F)	Hulaki road (Dirt road) was not pitched	Population demanded pitched road	Government	

D. Vision of the future

With a mixed group of men and women, the goal was to develop an image of village resources and human wellbeing into 2030 to understand the opportunities and constraints, as well as aspirations for the future. This exercise built upon all the work completed in the previous sessions. In addition, the exercise took into account the photographs of the landscape, including things they are proud of and things that need to be improved upon in the future, that a group of young people had produced following instructions given on day 1. In the section below we include the map that encapsulates Madhuri village's vision of the future (Map 7). We also include a few of the photographs taken by the youth. These images operationalize the collective vision of the future.

The group's vision focused on expanded opportunities for improved agriculture, income generation, water supply, healthcare and education. Having identified trends in reduction of available farm and grazing land along with sometimes tenuous access and management of water resources, the village seeks to reverse effects through learning to do more with less available land, better managing existing resources, and improving infrastructure. Achieving their vision will allow for improved food security, a healthier and more educated population, and expanded livelihood options. To achieve their vision the group must overcome several constraints and they were not clear about which organizations could be involved to assist. Women, men and youth will all face similar and distinct constraints in achieving the vision. Women lack title to property and decision-making power lies mostly with men. They have little say in terms of education, agriculture, health, etc. For men, there isn't much possibility available in the village to utilise their potential. The education system is weak, income generating activities limited, and other related facilities inadequate. Not many people from the village are capable of teaching or working in health, and skilled people from the outside are reluctant to live in the village, which presents barriers for improving services. Constraints for youth in particular result from poor education, competing demands and lack of opportunities. They make dung cakes for fuel given a lack of firewood, fetch water from distant locations, assist with farming, and sell goods in area markets yet if the community's vision is not achieved their potential will be limited.

Map 7. Future map of the community

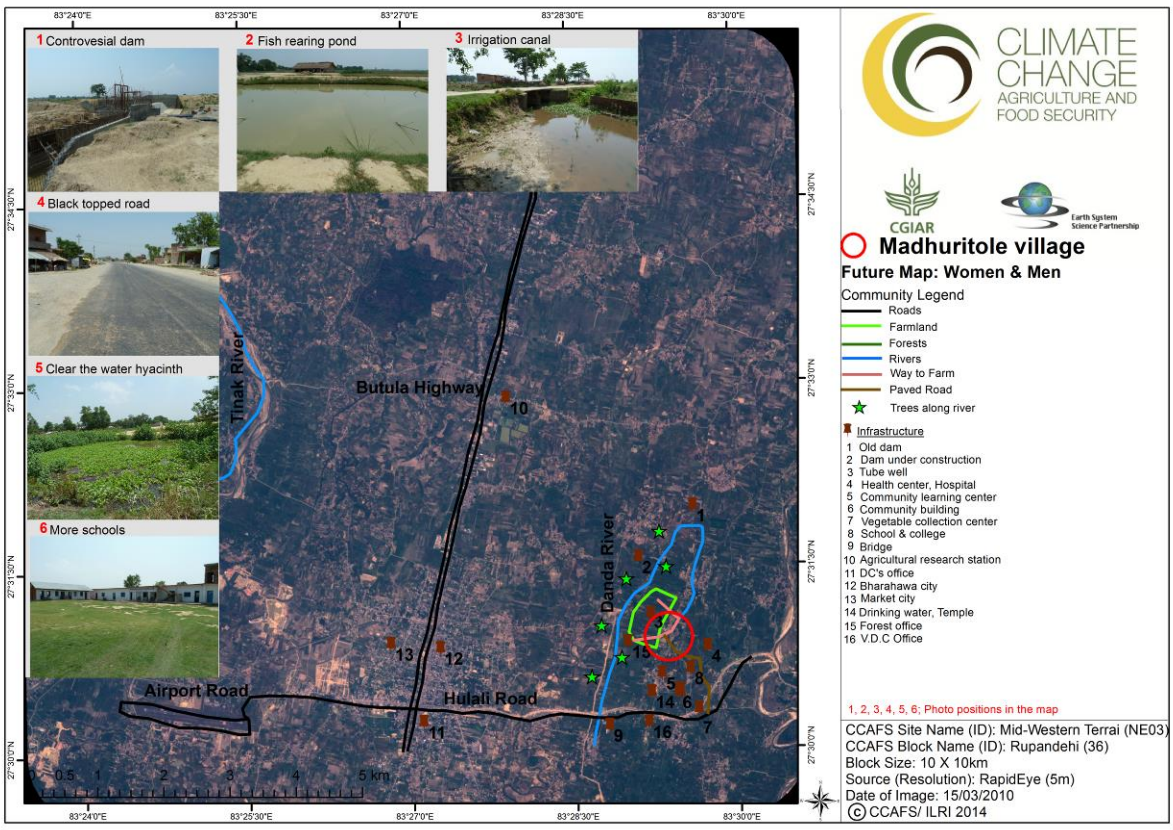


Table 3. Vision of the future

Resources	Preferred condition for 2030	Opportunities	Constraints	Organisations to involve
Forest	More private and public forest area in and around the village	Self sufficiency in fire fuel, animal forage, timber and recreation	All the land is farmland	
Farmlands	More irrigation facilities and better farming practices	Better opportunities at food security	Increasingly degrading soil fertility	
Schools	Better facilities for education, sports and other extracurricular activities. Also a college for obtaining bachelors degree	Villagers do not have to send their children away from the village to get better education. Production of skilled manpower	Lack of skilled teachers	
Hospital	Upgrade health post to full hospital that is well equipped	Better health status	Doctors and other service providers don't live in the villages	
Markets	A self-governing market for agricultural as well as other products	Better access to goods and opportunities for increased sales of products	There is no organization or management body working to facilitate market activities	
Water Supply	Drinking water tank for the village, tube wells and better irrigation canals for the farmlands	Better access to safe drinking water and irrigation	Lack of development activity support	

Topic 2: Organisational landscapes

This topic aims to show evidence of organisational capacities that help address food security and manage resources. This will inform CCAFS about how prepared the village is to respond to the challenges envisaged as a consequence of climate change or other future challenges and to engage with CCAFS partners at a collective level.

Specifically, this section presents the different formal and informal organisations involved in the community in general terms, as well as with respect to food security in different situations (i.e. average and crisis conditions), and natural resources management (NRM). It also elaborates on what types of activities the organisations are engaged in, who their members are, whether the organisations are useful, etc.

A. Basic spheres of operation

Participants were asked to draw three large concentric circles on the ground. The inner circle would represent the community, the middle circle the locality and the outer circle beyond the locality. Participants were then asked to name organisations working in the area, whose names were written on cards, and place the cards in the appropriate circle. Thus, the group placed in the inner circle the cards of organisations that worked in the community, in the middle circle the cards of organisations operating in the locality, and in the outer circle those that operated beyond the locality. See Photo 2 for an example of the activity as carried out with the study participants. The results are shown in the diagrams that follow.

Based on this structure, the men identified 14 organisations in the village while the women identified 15. Seven of the identified organizations were the same among men and women. The foci of the organizations operating in and around Madhuri include agriculture technology transfer, microfinance, irrigation, education, health, community development and NRM. Men and women's priorities differed as they ranked organisations as the most important. Women ranked Anukampa Cooperatives first while the men ranked the District Agriculture Development Office as number one. Overall both groups ranked agriculture focused organizations as their priorities, however they differed among others, such as women ranking health service providers higher than men. Women gave emphasis to local community organizations whereas men chose government organizations. Both groups had a good amount of information about the identified organization, however women knew less about those focused on NRM. In Tables 4 and 5, more detailed information is provided on the five most important organisations as they were ranked by the men's and women's groups.

Photo 2. The organisational landscape activity in progress

Figure 1. Organisational landscape of the men's group

	Legend
1	District Irrigation Office
2	Durga Group
3	Baija Nath Group
4	Madhuri Multipurpose Cooperative
5	Anukampa Agricultural Cooperative
6	District Agriculture Development Office
7	Community Development Organization
8	District Health Post
9	District Forest Office
10	Village Development Comittee
11	Shree Sidhi Community study centre
12	Red Cross
13	District Soil Conservation Office
14	Office for disaster Management

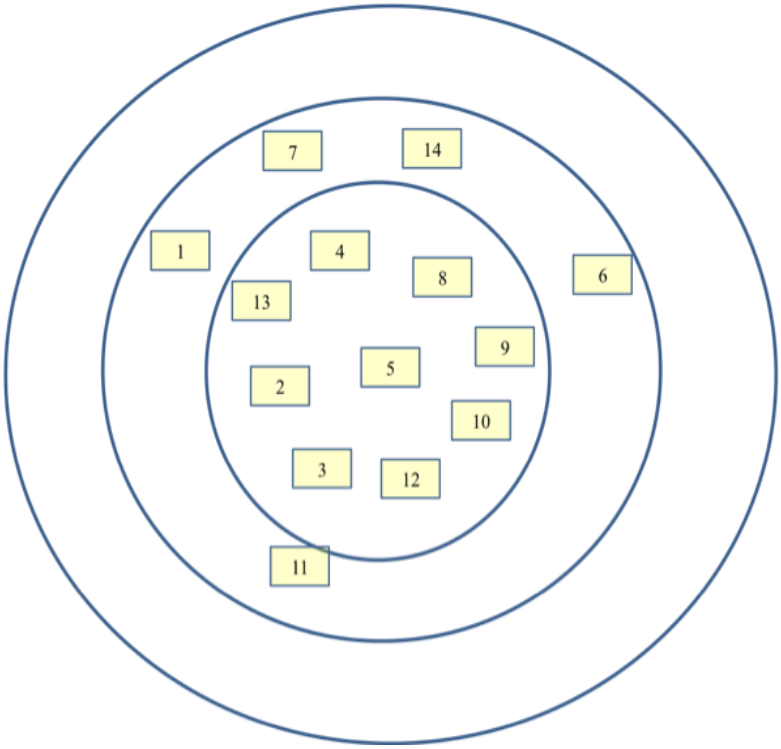


Figure 2. Organisational landscape of the women's group

	Legend
1	Bajyanath Agriculture Comm. Org
2	Durga Agricultural Community Org.
3	Madhuri Multipurpose Farmer's Group
4	Community Development Fund
5	Community Learning Centre
6	Jyoti Youth Club
7	Anukumpa Agric Cooperative Org
8	Community Mutual Helping Centre
9	Local Gov't and Comm. Devt. Pgm
10	Village Development Committee
11	Livestock Services Centre
12	Ministry of Health
13	District Agriculture Development Office
14	Agriculture Research Station
15	Village Development Office

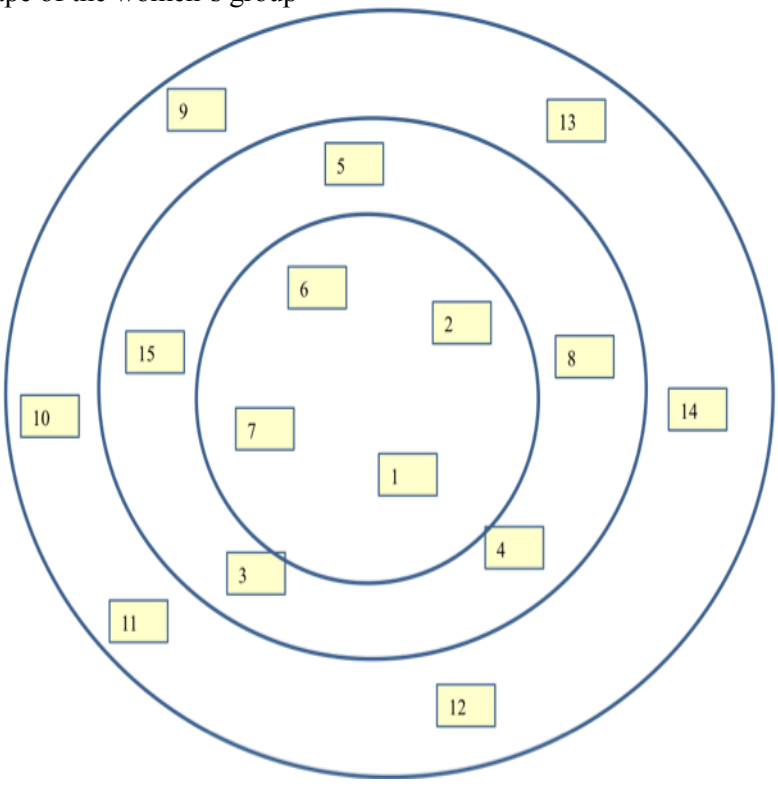


Table 4. Information on the first five organisations ranked by the men

							For community groups		
	Organisation name	**Main activities**	**Number of members (estimate)**	**Access (open or restricted to…)**	**Origin (indigenous, state, NGO, project)**	**Sphere of operation: community, local, beyond local**	**Sources of funding (members, external, both)**	**Existed how long (less than 1 yr, 1-5, longer)**	**Formal or informal**
1	District Agriculture Development Office	Agriculture technology dissemination. Serves as link with research and extension, NGOs and local organizations to improve agriculture	50-60	Open	State	Community	Members and external	Longer	Formal
2	Anukampa Agriculture Cooperative	Works in horticulture and runs a tool bank. Members provide support during funerals	65	Open	Private	Community	Members	Less than 1 year	Formal
3	Village Development Committee	Supports child education and school projects, builds houses for widows, and funds efforts of registered groups	NA	Open	State	Community	External	Longer	Formal
4	Community Development Organization	Advocates against HIV/AIDS stigma and promotes kitchen gardens, village banking, and capacity building	NA	Open	NGO	Community	External	Longer	Formal
5	District Irrigation Office	Supports community based organizations. Provides for clean drinking water and promotes dairy goat farming	NA	Open	State	Community	External	Longer	Formal

Table 5. Information on the first five organisations ranked by the women

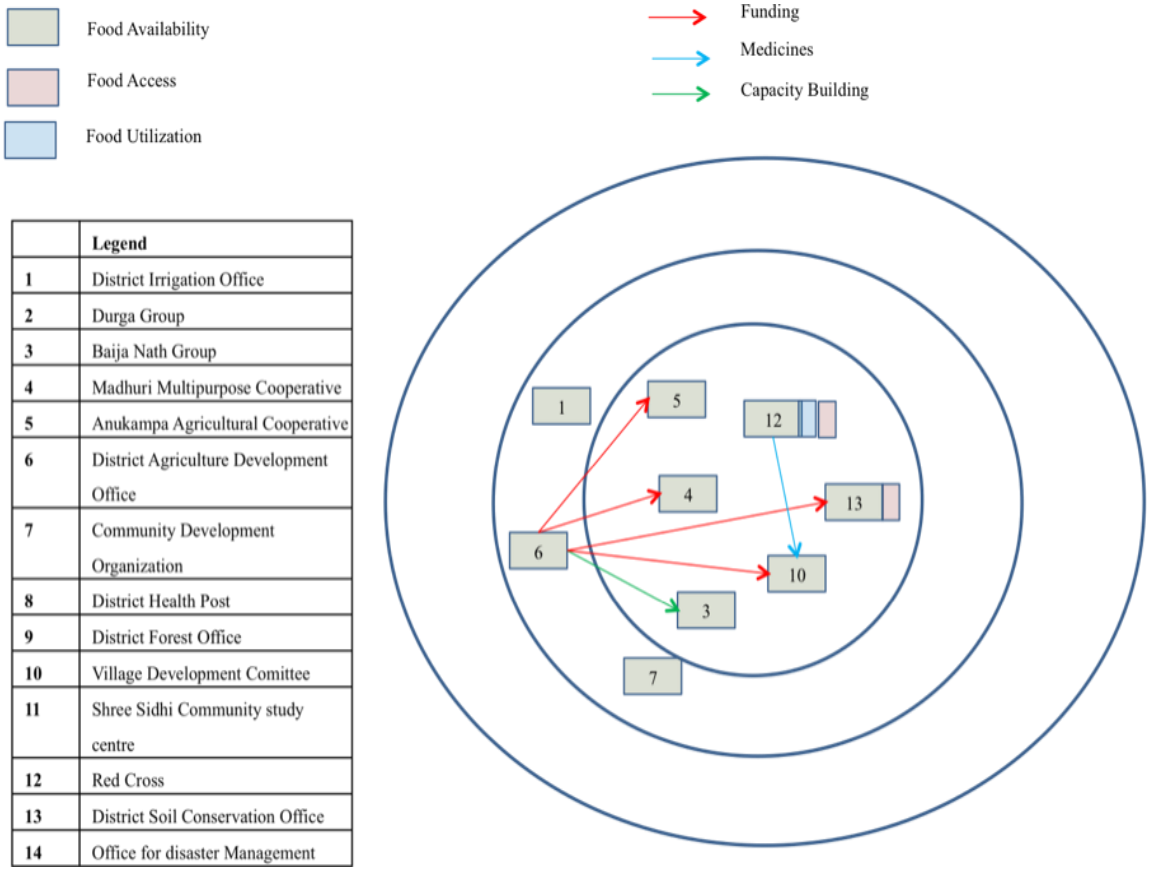
	Organisation name	Main activities	Number of members (estimate)	Access (open or restricted to…)	Origin (indigenous, state, NGO, project)	Sphere of operation: community, local, beyond local	Sources of funding (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
1	Anukampa Agriculture Cooperative	Provides fertilisers at reasonable prices as well as savings and credit services		Open	Indigenous	Community	Members and external	Longer	Formal
2	Health Post	Maternity services, vaccination, and primary health services		Open	State	Local	External	5 years	Formal
3	Jyoti Youth Club	Fishery, road construction and function catering	55	Open	Indigenous	Community	Members and external	3 years	Informal
4	Madhuri Multipurpose Farmer's Fund	Savings and credit services as well as agriculture support	38	Men only	Indigenous	Community	External		Formal
5	Durga Community Center	Savings and credit services as well as fertilizer provision		Open	Indigenous	Community	External		Formal

B. Organisational landscape of food security

The goal of this exercise was to get an improved understanding of how the organisational landscape contributes to the food security of the group. Food security is mostly measured at the household level. Nonetheless, community-level organisations and interactions influence the food security of different groups within the community differently. Male and female participants were asked to discuss the concepts of food availability, access and utilization, and then review each organisation they had previously identified by asking which of them had activities that fell under these categories. Organizations identified by men and women are shown in Figures 3 and 4.

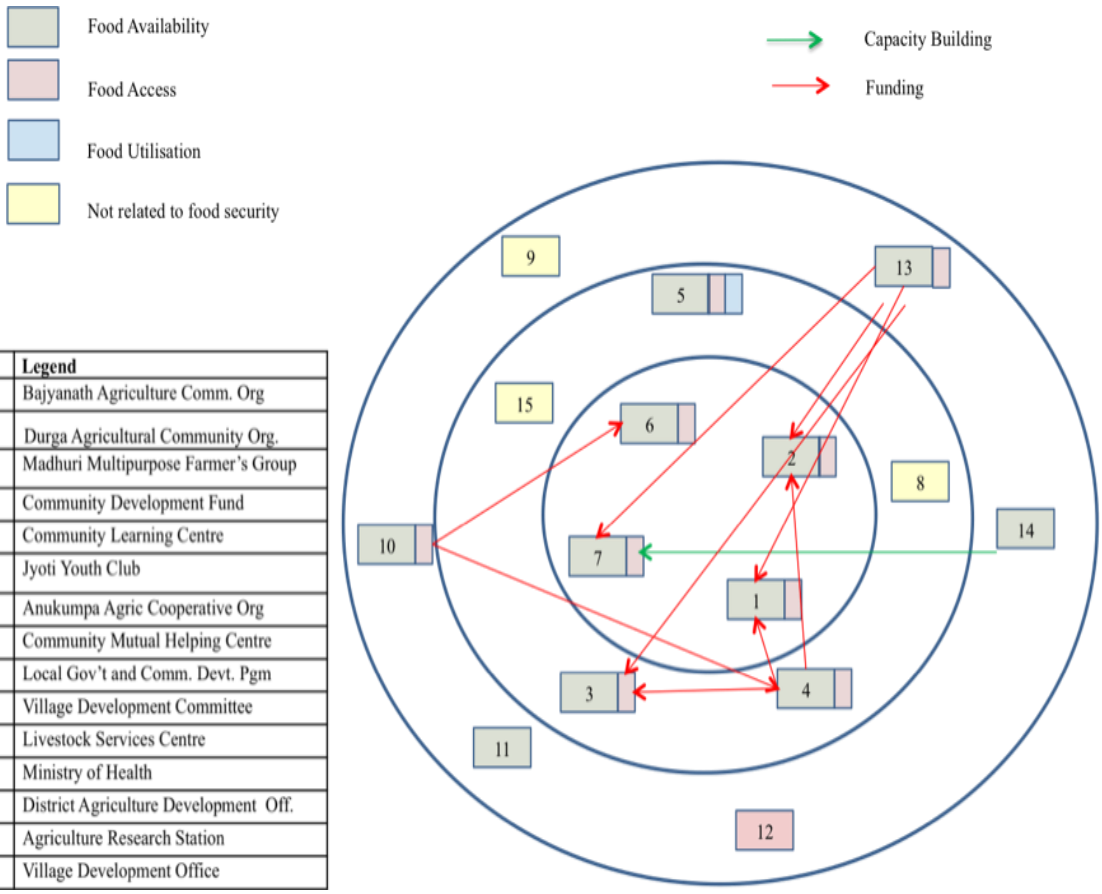
The majority of the organizations identified by the groups were involved in food security. The men cited several local government entities and district government offices as all involved in food security while women cited Anukampa Agriculture Cooperative, the health post, Jyoti Youth Club, Durga Community Group and the Madhuri Multipurpose Fund. The areas of focus among the organizations include farming practices, agriculture technology transfer, seed and fertilizer provision, and diverse capacity building activities. The majority of the organizations are focused on food availability, followed by food access and very few addressing food utilization. Many organizations have links to and coordinate with the District Agriculture Development Office and other government institutions for funding and capacity building. Overall the men reported that linkages were typically all one way, with larger organizations supporting smaller ones and relationships more based around collaboration rather than partnerships. Women questioned the impact and effectiveness of the organizations working in food security, as their conditions have not improved though there are several working in the village. The groups noted that a food crisis has not occurred in Madhuri so they could not comment on which organizations would provide support. The men did report that the government does provide some support when there is a severe flood but that it's negligible.

Figure 3. Organisational lanscape of food security – men



	Legend
1	District Irrigation Office
2	Durga Group
3	Baija Nath Group
4	Madhuri Multipurpose Cooperative
5	Anukampa Agricultural Cooperative
6	District Agriculture Development Office
7	Community Development Organization
8	District Health Post
9	District Forest Office
10	Village Development Comittee
11	Shree Sidhi Community study centre
12	Red Cross
13	District Soil Conservation Office
14	Office for disaster Management

Figure 4. Organisational landscape of food security – women



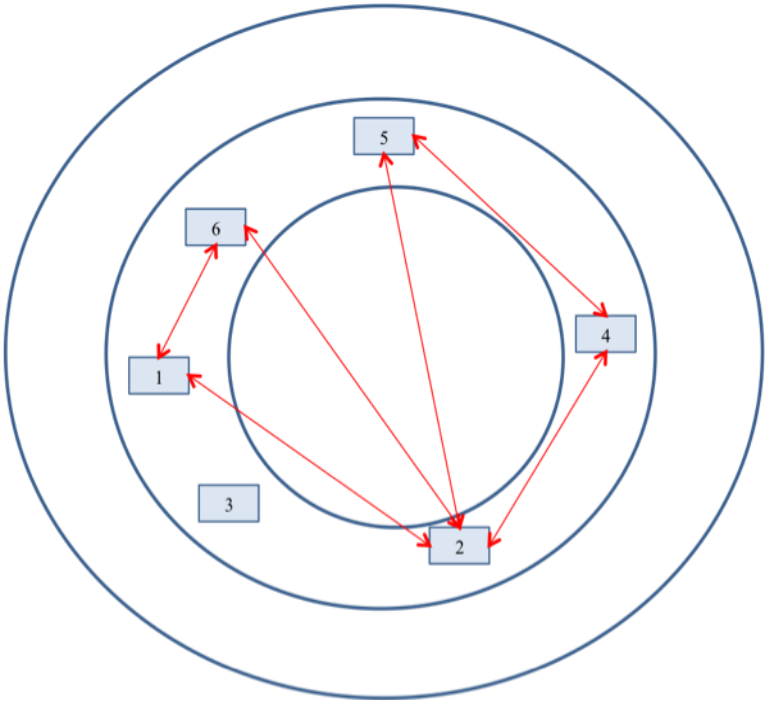
	Legend
1	Bajyanath Agriculture Comm. Org
2	Durga Agricultural Community Org.
3	Madhuri Multipurpose Farmer's Group
4	Community Development Fund
5	Community Learning Centre
6	Jyoti Youth Club
7	Anukumpa Agric Cooperative Org
8	Community Mutual Helping Centre
9	Local Gov't and Comm. Devt. Pgm
10	Village Development Committee
11	Livestock Services Centre
12	Ministry of Health
13	District Agriculture Development Off.
14	Agriculture Research Station
15	Village Development Office

C. Organisational landscape of natural resource management

In this section, the organisational landscape in relation to NRM is discussed. Specifically, what organisations were actively working to protect the environment, manage natural resources, etc.? The process entailed asking the group to highlight what organisations are involved in the management of natural resources in the community; developing a list of natural resources important to the livelihoods of the community; and asking the group to decide on a symbol for each type of natural resource listed.

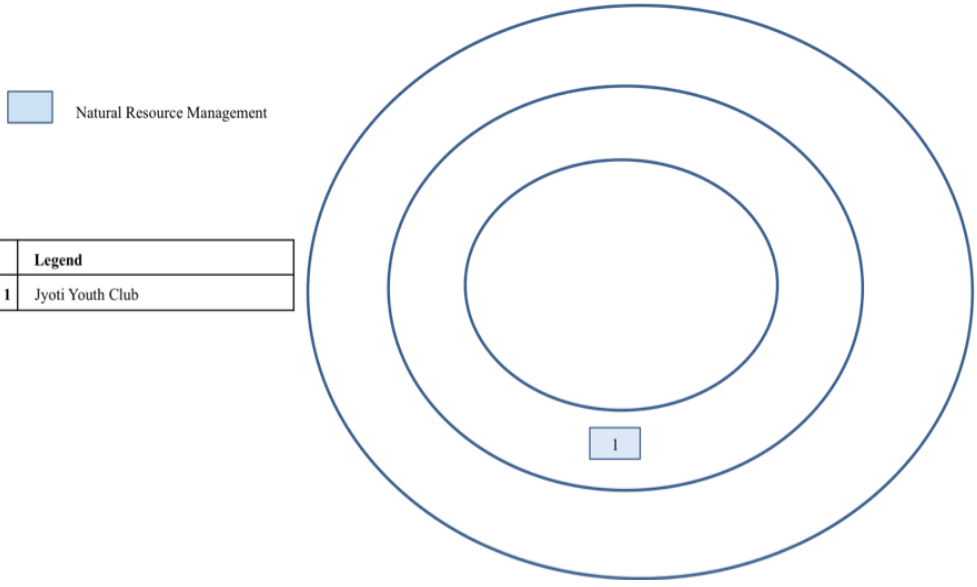
The men's group identified 6 organizations supporting NRM while the women's group only identified one. These NRM organizational landscapes are shown in Figures 7 and 8. All those listed by the men are government district level offices including soil, irrigation, agriculture and forestry. The main activities of the NRM organizations are seedling and seed provision, erosion control, canal and dam construction for irrigation, land protection from flooding and landslides, and capacity building in soil management and improved agriculture practices. The linkages between the agencies were found to be good, however there were no other types of organizations targeting NRM found to be operating in the area with whom the government collaborates. The organization identified by the women is the Jyoti Youth Club, which manages ponds informally for a small fee and supports infrastructure works. Women were not familiar with NRM and could not identify other organizations working on such issues within or around Madhuri.

Figure 7. Organisational landscape of natural resource management – men



	Legend
1	District Agriculture Development Office
2	District Development Committee
3	District Officer of Water Hazards and Control
4	District Forest Office
5	District Soil Conservation Office
6	District Irrigation Office

Figure 8. Organisational landscape of natural resource management – women



	Legend
1	Jyoti Youth Club

Table 6 below summarizes information on all the organisations identified separately by male and female participants. The organisations are classified according to their role in supporting food availability, access and/or utilization, as well as the provision of relief in times of food crisis, and the management of natural resources.

Table 6. Information on highlighted organisations of men and women (1=yes, 0=no)

Organisational Landscape	**Men**					**Women**				
Name of organisation	**Org. ID by men**	**Sphere 1=Village 2=Locality 3=Beyond locality**	**Food security**	**Food crisis**	**NRM**	**Org. ID by women**	**Sphere 1=Village 2=Locality 3=Beyond locality**	**Food security**	**Food crisis**	**NRM**
1. District Agriculture Development Office, Ministry of Agriculture	1	2	1	0	1	1	2	1	0	0
2. Anukampa Agriculture Cooperative	1	1	1	0	0	1	1	1	0	0
3. Village Development Committee	1	1	1	0	1	1	1	1	0	0
4. Community Development Org.	1	1	1	0	0	1	1	1	0	0
5. District Irrigation Office	1	2	1	0	1					
6. District Health Post	1	2	1	0	0					
7. Durga Group	1	1	1	0	0	1	1	1	0	0
8. Baija Nath Group	1	1	1	0	0					
9. District Forest Office	1	2	1		1					
10. Madhuri Multipurpose Cooperative	1	1	1	0	0	1	1	1	1	0
11. Shree Siddhi Pahadhi Mahatma Community Study Centre	1	1	1	0	0	1	1	1	1	0
12. Red Cross	1	3	1	0	0					
13. District Soil Conservation Office	1	2	1	0	1					
14. Office for Disaster Management	1	2	1	0	1					
15. Bajyanath Agriculture Comm. Org						1	1	1	0	0
16. Jyoti Youth Club						1	1	1	0	1
17. Community Mutual Helping Centre						1	1	0	0	0
18. Local Government Community Development Program						1	1	0	0	0
19. Livestock Service Centre						1	2	1	0	0
20. Ministry of Health						1	3	1	0	0
21. Agricultural Research Station						1	2	1		0
22. Village Development Office						1	1	0	0	0
TOTALS	**14**	**Village=7 Locality=6 Beyond locality=1**	**14**	**0**	**6**	**15**	**Village=11 Locality=3 Beyond locality=1**	**12**	**0**	**1**

Topic 3: Information networks

The aim of this exercise was to understand the diversity of options people use for accessing information on agriculture and weather; how people take advantage of sources of information available, and if some sources are not used and why. We want to describe networks of how people access and share information within the community.

Men and women identified 10 sources of information. Only women used astrologers and the animal health service centre, but otherwise the two groups utilized the same sources for weather, fertilizer, seed and livestock information. The most popular sources of information were friends, relatives, radio and television. Other popular sources are neighbours, agro-vets and trainings. Fertilizer and seeds were the most sought after topics of information for both men and women. Men did not report sourcing any information on livestock from any source while the women identified four sources for livestock information. Women noted they know where to access information but rarely actually do so given their time commitments to household chores. Both groups did not seek information about market prices and reported they obtain their prices direct from traders or in the market.

Table 7. Sources of information for men and women (1=yes, 0=no)

Source	**Topic (women)**				**Topic (men)**				
	Weather	**Fertilizer**	**Seed**	**Livestock**	**Weather**	**Fertilizer**	**Seed**	**Livestock**	**Total**
Friends/relatives	1	1	1	0	1	1	1	0	**6**
Neighbour	0	1	1	1	0	1	1	0	**5**
Astrologist/priest	1	0	0	0	0	0	0	0	**1**
Agri. Dev. Office	0	1	1	0	0	1	1	0	**4**
Animal health service centre	0	0	0	1	0	0	0	0	**1**
Radio/TV	1	1	1	0	1	1	1	0	**6**
Observation	0	1	1	1	0	1	0	0	**4**
Agro-vet	0	1	1	0	1	1	1	0	**5**
Trainings	0	1	1	1	0	1	1	0	**5**
Field visit/tour	0	1	1	0	0	1	1	0	**4**
Total	**3**	**8**	**8**	**4**	**3**	**8**	**7**	**0**	

Conclusion and recommendations

Madhuri is located in Basantapur VDC in the Rupandehi district. It is situated in Indo-Gangetic Plain of Nepal, known for its fertile, flat land. Madhuri has access to roads, electricity and communication. The district headquarters is only 3-4 km away from Madhuri. Despite it's location in the district and plains, the village lacks opportunity and faces increasing challenges from rising populations, encroachment on area forests, growing extremes in water availability, insufficient animal grazing land, variable rainfall, and decreasing soil fertility. Rice, wheat, oilseed, pulses, vegetables and fruit are the main crops produced in Madhuri and cows, buffalos, chickens, goats and oxen are common types of livestock tended. Production is at the subsistence level and though area markets exist they are not commonly used as little excess is produced. Livestock is constrained as grazing typically is only able to occur on agricultural fields during the off-season. As the population and demand for land has increased, the surrounding forests have been converted into farmland. The impacts have been a decrease in plot size, increased erosion, decreased soil fertility, variable water resources, and lack of available firewood. Manure is a common source of fuel given a lack of alternatives. Madhuri does have several water resources such as rivers and canals, which are used for farm irrigation and drinking water. Periodically the rivers run low or flood farmland, however these extreme do not often occur. Madhuri's vision for the future is that existing health and education facilities are upgraded, agricultural productivity improved, water resources managed, and income generation opportunities increased. The village does not currently face critical challenges, yet without efforts to mitigate and address challenges their food security, natural resources and livelihoods risk further degradation.

There are several organizations working in and around Madhuri, of which the men's group identified 14 and women 15. These organizations focus on agriculture technology transfer, microfinance, irrigation, education, health, community development and NRM. Despite their efforts, the groups find the level of assistance insufficient to meet needs and that conditions have not improved. The majority of the organizations are community based and comprised of cooperatives, local government agencies and district government offices. Besides the Red Cross, no external organizations were identified. Agriculture is a large focus of identified organizations, with nearly all those cited by men and women addressing food security. Efforts focus on capacity building, provision of seeds and fertilizer, and improved farming practices. Knowledge of NRM was severely limited among women, who identified only one organization that works in aquaculture and infrastructure. Men identified several NRM focused organizations, all of which were district government offices. NRM efforts by organizations focus on seedling and seed provision, erosion control, canal and dam construction for irrigation, land protection from flooding and landslides, and capacity building in soil management and improved agriculture practices. Lack of local capacity is an issue and finding qualified people to work in the village has been a challenge. Coordination between organizations exists more on a collaborative rather than partnership basis. The District Agriculture Development Office serves as a major linkage to other organizations and between government entities linkages are generally strong.

The groups identified 10 sources of information on weather, fertilizer, seed and livestock. Seeds and fertilizer were the most sought after types of information among both men and women, whereas few inquired about weather and livestock. Neither group reported market information as important given a lack of excess production and that traders or the markets set prices. The most popular sources of information are friends, relatives, radio and television. Other popular sources are neighbours, agro-vets and trainings. This depth of sources suggests that organizations are having some level of success in reaching groups, however women noted that while they were aware of sources they often did not have the opportunity to use them given other obligations.

Implications for CCAFS

Future CCAFS work and that of other organizations will need to address soil fertility, improved technologies, resource conservation and management, sustainable production systems, and expansion of income generating opportunities to improve food security and livelihoods of the Madhuri population.

There is a great opportunity to bring changes quickly to Madhuri because of the level of awareness among study participants about climate change and the community interest in improving their condition. The potential to achieve food security is high with improvements in soil fertility. This can be supported through interventions such as use of green manure (e.g. planting dhaincha before rice), composting, farmyard manure management, and establishment of biogas. The use of cow dung as a source of fuel due to lack of forests and firewood limits the manure available to improve soils as well as results in negative health impacts. Alternative fuel sources and increased tree planting will have numerous benefits for the community, allowing for time savings, improved health, erosion control and water management. Agricultural productivity will also need to be addressed to combat population pressures, which have led to encroachment of forests, decreased plot size, and limited grazing options for livestock. There are significant opportunities for crop intensification and increased vegetable production through organic farming and the use of improved seed technologies. Commercial fruit production could also be expanded offering agroforesty and income generation benefits for farmers. Ultimately, without improvements in education and livelihood options in Mahduri the challenges it faces will continue to increase. Opportunities exist for targeted development interventions as well as participatory action research, such as leveraging local knowledge, technology development and confirming climate changes. In addition, linking Madhuri to additional resources and strengthening capacities among existing organizations will greatly benefit the community. National efforts include the encouragement of climate field schools, expansion of integrated pest management practices, and development of stress tolerant cereal varieties by the National Agriculture Research Council. While there are several organizations operating at the local level, increased coordination and expansion of efforts will increase their impact. Organizational and local capacity in NRM is lacking and will be important to strengthen if Madhuri is to face its increasing challenges.

Among the organizations noted by the groups, those presented in Table 8 are of particular interest for CCAFS. Given the implications for CCAFS and the identified challenges for Madhuri, Table 9 provides a summary of targeted recommendations based on opportunities.

Table 8. Potential CCAFS partners

ORGANISATION	SPHERE OF OPERATION	ACTIVITIES	STRENGTH
Anakumpa Multipurpose Cooperative	Village and locality	Horticulture	Provision of seed, fertilizer and pesticides
Madhuri Community Development Organization	Village and locality	Agriculture and microfinance	Capacity building in agriculture, savings and credit
Jyoti Youth Club	Village and locality	Aquaculture	Pond and infrastructure support
Baijaya Nath Agriculture Cooperative	Village and locality	Microfinance	Women's groups engaged in savings and credit
National Wheat Research Program Bhairahawa	Village and beyond	Food security	Developing, multiplying and disseminating improved wheat varieties and information

Recommendations for major opportunities

Table 9. Recommendations for major opportunities

Gaps in knowledge/ current constraints that could provide opportunities/niches for CCAFS and partners	Opportunities for research (CCAFS)	Opportunities for Action Research (CCAFS partners)	Development Interventions (Partners)
1. Conduct varietal demonstrations on rice, wheat, lentil and vegetables	X	X	

Gaps in knowledge/ current constraints that could provide opportunities/niches for CCAFS and partners	Opportunities for research (CCAFS)	Opportunities for Action Research (CCAFS partners)	Development Interventions (Partners)
2. Support crop intensification using organic farming	X	X	
3. Support soil management (composting, green manure and farm yard manure)	X	X	
4. Promote resource conservation technology (minimum and zero tillage)	X	X	
5. Support carbon sequestration	X	X	
6. Establish and upgrade meteorological station in National Wheat Research Program	X	X	
7. Collect weather information to support weather insurance modelling	X	X	
8. Regular maintenance of canal and install irrigation pipe at Rohini River to pump water during dry season			X
9. Introduce sanitation and hygiene program and install village toilet			X
10. Upgrade lower secondary school up to higher secondary and +2			X
11. Upgrade existing health post and increase number of beds			X