

## **FIELD GUIDE 10.5: PARTICIPATORY MAPPING OF SOIL AND WATER RESOURCES**

Participatory mapping is an excellent way of learning in greater detail about the community, their resources, the hazards they face, and how the village, farm fields, roads, hills and water sources interrelate. It is also a method for the community members to see things they take for granted every day through a new lens. Participatory mapping is a tremendous tool because all workshop participants can engage in the activity—it's very visual—non-readers will be included.

Organize a 5-hour workshop with 12–15 farmers from your community. The purpose of this workshop is for the farmers to understand the impact that wind, soil health, location of water sources, variable rains, runoff, floods, and drought have on agricultural productivity.

### **Geography of the Community**

Consider returning to the village the day before the workshop to tour the farm fields, forests, and water sources with one of the farmers. Take a few minutes to talk to farmers you meet in order to gain a greater understanding of the challenges they are facing. Work in advance with an agriculturist on background information on soil restoration, water conservation and management, and crop selection so that you are better prepared. Arrange for him to participate in a second, follow-up workshop for site visits, to discuss the results of the mapping exercise and to suggest solutions to the farmers' challenges.

### **Drawing the Basic Map**

Tape several sheets of newsprint together and place them on the floor. A suggestion is to begin with a black marker to draw the basic outline of the village, roads, pathways, and major farming areas. You can then use different colors for houses, rivers, and farm fields. Another suggestion is to take 15 minutes and have community members draw a small preliminary map of the village, surrounding farm fields, roads, pathways, and watersheds on a single sheet of newsprint. This will accomplish two things: you can quickly solve spatial problems by moving things around on the preliminary drawing—and you might discover that there is a good illustrator in the group. Let your group artist transfer this basic outline of the community onto the larger piece of taped together sheets of newsprint.

### **Indicating the Location of Community Features**

Take colored sheets of paper and cut them out to represent additional features. These could be individual farm fields, houses, and school. Stick them to the map with removable tape so they can be moved or adjusted; by removing these bits of paper completely, the map can be used again for a different assessment.

### **Features Important for Soil, Water and Agriculture**

The following are important features:

- sources of both domestic and agricultural water and their relationship to the village/farmlands rivers and streams;

- seasonal availability of both domestic and agricultural water;
- the location of steep hillsides or canyons;
- community land, forest boundaries, grazing/pasture lands.

When everybody at the workshop is satisfied, begin applying farm specific information. Examples could be:

- farmlands vulnerable to drought (or insufficient access to water);
- farmlands vulnerable to flooding, too much wind exposure, and other weather-related hazards;
- areas that suffer from excessive runoff;
- areas of high erosion and gullies;
- the location of different crops;
- farmers' perception of the fertility of their soil: good, medium, or poor;
- types of soil;
- areas of high and low agricultural productivity.

### **Indicating Community Hazards on the Map**

Next is to begin the process of overlaying hazards impacting the community onto the map. These hazards might be floods, portions of the community that are most affected by drought, by heavy rain, or by extreme weather events. Which parts of the community, which people, which personal assets, which environmental resources, and which livelihoods are the most vulnerable to the hazards as identified on the hazard map?

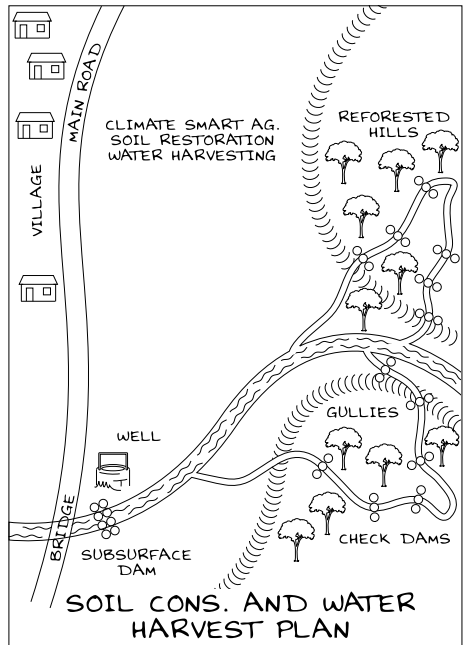
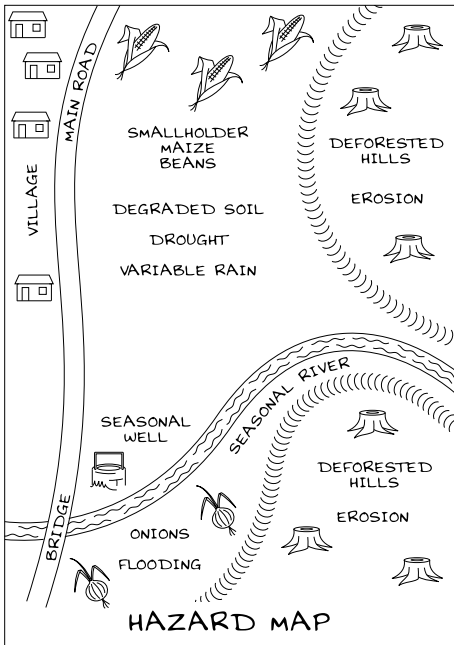
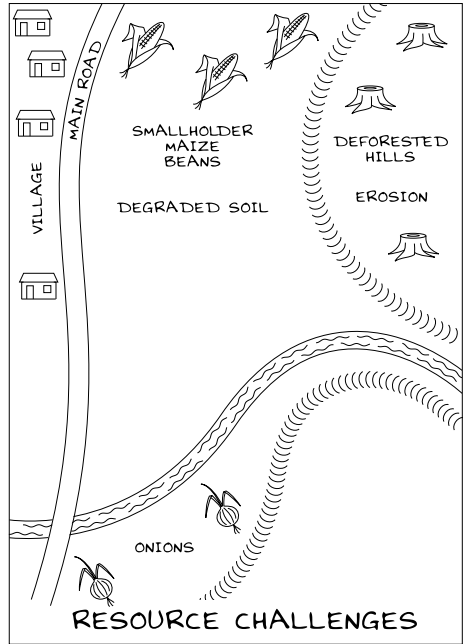
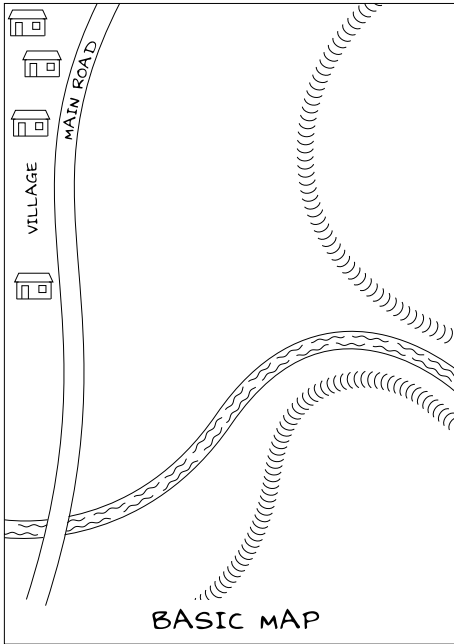
### **Conclusion**

To reinforce what has been learned

- 1 to discuss and review what has been learned;
- 2 to reinforce the challenges for farmers that were identified during the mapping exercise;
- 3 to discuss whether hazards such as floods, variable rainfall and drought impact soil and water resources;
- 4 to discuss whether the intensity of the hazards is increased by farming practices and deforestation.

What are the community members' current coping strategies for dealing with these difficult periods? Capacity building: Which of the difficult events are they having trouble coping with due to a lack of strategies?

Summarize a list of the challenges and hazards farmers face in preparation for the visit by the extension agent.



## Workshop Lesson Plan for Participatory Mapping for Soil and Water Resources

- *Duration:* five hours (this can be done in one two-hour workshop and a second three-hour workshop).
- *Purpose:* support participants in drawing a map of their farm fields, water sources, and locations of hazards so that the farmers can understand climate, water, and soil challenges to crop productivity:
  - Objective 1: All participants will understand why they are drawing a map.
  - Objective 2: All will know where domestic and agricultural and water come from.
  - Objective 3: All will understand climate, water, and soil challenges to crop productivity.
  - Objective 4: All will know the impacts that the hazards have on the community and on crop production.
  - Objective 5: All will know the origin of floodwater.

### *Materials*

- artist's drawings/posters; make sure that the scenes and people they contain will appear familiar to participants;
- how-to cards without written words for workshop participants to take home;
- large sheets of newsprint and tape;
- colored markers;
- colored construction paper.

### *Preparation*

- Find a workshop location: a community center, schoolroom, or church.
- Consider returning to the village the day before the workshop to tour the farm fields, forests, and water sources with one of the farmers. Take a few minutes to talk to farmers you meet in order to gain a greater understanding of the challenges they are facing.
- Work in advance with an agriculturist on background information on soil restoration, water conservation and management, and crop selection so that you are better prepared. Arrange for him to participate in a second workshop for site visits, to discuss the results of the mapping exercise and to suggest solutions to the farmer's challenges.

### ***Activity 1: Map Introduction. Duration 30 Minutes***

#### *Purpose*

Introduce and explain the value of drawing a map of farm fields, terrain, water sources, and crops.

#### *What to Do*

- 1 Introductions. Ice breaker: Sing a song or play a game.
- 2 Introduction to workshop: Tell the participants what they'll be able to do as a result of the lesson.

- 3 Use practical examples of why a map will be useful.
- 4 Discuss the impact of sun, wind, crops, water sources, floods, droughts, and variable rain on agricultural productivity.
- 5 Discuss how the map will show relationships between the village, farms, hills, roads hazards, and water sources.
- 6 Share with the participants that this is their map and that they should do the planning and drawing.

### *Workshop Participants*

Have participants talk about what they do and don't understand, what they do and don't like.

### ***Activity 2: Drawing the Basic Map. Duration 2 Hours***

#### *Purpose*

To let the participants draw a preliminary draft of the map to work out scale and spatial relationships.

#### *What to Do*

- 1 Take 15 minutes and have community members draw a small preliminary map of the village, surrounding farm fields, roads and pathways, farm fields and watersheds on a single sheet of newsprint. This will accomplish two things: you might discover that there is a good illustrator in the group—and you can quickly solve spatial problems by moving things around. A suggestion is to begin with a black marker to draw the basic outline of the village, roads, pathways, and major farming areas. Later, you can then use different colors for houses, rivers, and farm fields.
- 2 After the participants have had a chance to discuss the map, encourage them to make corrections to the map.
- 3 Then, tape several sheets of newsprint together creating a much larger sheet and place it on the floor.
- 4 Let your group artist transfer this basic outline of the community onto the larger of newsprint.
- 5 Take colored sheets of paper and cut them out to represent additional features. These could be individual farm fields, houses, schools, and churches—and stick them to the map with removable tape.

Other ideas that could be indicated on the map could include:

- sources of both domestic and agricultural water and their relationship to the village and farmlands;
- seasonal availability of both domestic and agricultural water;
- rivers and streams;
- the location of steep hillsides or canyons;
- community land, forest boundaries, grazing/pasture lands.

*Workshop Participants*

Have participants talk about what they do and don't understand, what they do and don't like.

*Workshop Facilitators Note*

- 1 This map is not meant to be submitted to *National Geographic*; this map is meant to be something that can be readily understood and used by the community members. Their sense of scale and spatial relationships may be different than yours—but if it means that they understand the information better—let it be.
- 2 A first short workshop could be held for introductions to the topic and for drawing a small, preliminary map. Later, the artist could transfer the information to the larger map and then a second workshop held to add expanded information.

Take a break for 15 minutes.

***Activity 3: Expanding the Map with Agricultural Information. Duration  
60 Minutes***

*Purpose*

To better understand the interrelationships between their agricultural systems, soil and water.

*What to Do*

- 1 When everybody at the workshop is satisfied with the basic map, begin applying useful agricultural information. Examples could be:
  - a farmlands vulnerable to drought (or insufficient access to water);
  - b farmlands vulnerable to flooding, too much wind exposure, and other weather-related hazards;
  - c areas that suffer from excessive runoff;
  - d areas of high erosion and gullies;
  - e the location of different crops;
  - f farmers' perception of the fertility of their soil: good, medium, or poor;
  - g types of soil;
  - h areas of high and low agricultural production;
  - i forest cover and areas of deforestation.

*Workshop Facilitators Note*

In the next workshop, you will actually visit the farm fields and water sources with an agriculturalist, and upon return will add new information—such as soil quality, water runoff, erosion, and deforestation.

**Activity 4: Expanding the Map with Community Hazard Information.**

**Duration 60 Minutes**

*Purpose*

To better understand their interrelationships between agricultural systems, the community, and hazards.

*What to Do*

- 1 Next, begin the process of overlaying hazards onto the map. Examples could include:
  - a areas of the community prone to flooding—and the source of floodwaters;
  - b areas of the community with insufficient access to water;
  - c areas of the community most affected by heavy rain or extreme weather events;
  - d what areas of the community are the most vulnerable to hazards;
  - e which people and which livelihoods are the most vulnerable to hazards.

**Activity 5: Conclusion: Open Discussion about the Map and a Summary of Why You Did This. Duration 30 Minutes**

*Purpose*

To discuss and reinforce what has been learned.

*What to Do*

- 1 discuss and review what has been learned;
- 2 reinforce farmers' soil and water challenges that were identified during the mapping exercise;
- 3 discuss whether hazards such as floods, variable rainfall and drought impact soil and water resources;
- 4 discuss community vulnerabilities to hazards;
- 5 discuss whether the intensity of the hazards is increased by farming practices and deforestation.

*Workshop Facilitators Note*

- What are the community members' current coping strategies for dealing with these difficult challenges?
- Capacity building: Which of the difficult challenges are they having trouble coping with due to a lack of strategies?
- Summarize a list of the challenges and hazards farmers face in preparation for the visit by the extension agent.