Manual for the Preparation of a Community-Based Adaptation Plan with a focus on Water Resources Management

With experiences from the Water and Climate Change Project in 9 villages of Kamonyi, Nyanza and Nyamagabe Districts of the Southern Province of Rwanda.

Partners: COCOF, UNICOOPAGI, IPFG AND MMM KIRAMBI
This Manual has been produced by Trocaire, the Irish Catholic Agency for World Development.

With the technical support from:

Rose Hogon, Karulinda Emmanuel, Bizimana Xavier, Gasasira Claudien; Ngabo Janvier, Safari Jean Baptist & Louise Umuhire.

Kigali, August 2016

Cover photo: Trócaire
Manual for the Preparation of a Community-Based Adaptation Plan with a focus on Water Resources Management

With experiences from the Water and Climate Change Project in 9 villages of Kamonyi, Nyanza and Nyamagabe Districts of the Southern Province of Rwanda.

Partners: COCOF, UNICOOPAGI, IPFG AND MMM KIRAMBI
## Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronyms and Abbreviations</td>
<td>5</td>
</tr>
<tr>
<td>List of Tables</td>
<td>6</td>
</tr>
<tr>
<td>List of figures</td>
<td>6</td>
</tr>
<tr>
<td>I. Introduction</td>
<td>7</td>
</tr>
<tr>
<td>II. Step 1 - Discuss climate change impacts with a particular focus on water resources</td>
<td>9</td>
</tr>
<tr>
<td>II.1. Purpose</td>
<td>9</td>
</tr>
<tr>
<td>II.2. Expected Outputs</td>
<td>9</td>
</tr>
<tr>
<td>II.3. Methodology</td>
<td>10</td>
</tr>
<tr>
<td>1. Explain the purpose of the Water and CC project</td>
<td>10</td>
</tr>
<tr>
<td>2. Discuss Climate Change – the impacts that the villagers see already, the impacts that the scientists forecast for Rwanda</td>
<td>10</td>
</tr>
<tr>
<td>3. Explain Climate Change Adaptation, Rwandan NAPA and the priority of Integrated Water Resources Management</td>
<td>14</td>
</tr>
<tr>
<td>4. Explain the five steps that the project is suggesting to the village for making a climate change adaptation plan focussed on water resources</td>
<td>16</td>
</tr>
<tr>
<td>5. Request the villagers to select or elect a team which will work with the project – the Village Climate Change and Water Committee</td>
<td>16</td>
</tr>
<tr>
<td>6. Before Closing the Public meeting</td>
<td>17</td>
</tr>
<tr>
<td>7. After the Public Meeting</td>
<td>18</td>
</tr>
<tr>
<td>III. Step 2 - Assess opportunities, capacity, vulnerability and risks</td>
<td>19</td>
</tr>
<tr>
<td>III.1. Purpose</td>
<td>19</td>
</tr>
<tr>
<td>III.2. Expected Outputs</td>
<td>19</td>
</tr>
<tr>
<td>III.3. Methodology</td>
<td>20</td>
</tr>
<tr>
<td>1. Prepare Village WCC Team</td>
<td>20</td>
</tr>
<tr>
<td>2. Mapping of village water resources by villagers facilitated by VWCC</td>
<td>24</td>
</tr>
<tr>
<td>3. Verification visit to the key sites: transect walk</td>
<td>26</td>
</tr>
<tr>
<td>4. Assess water resources management capacities (individual and organisations)</td>
<td>29</td>
</tr>
<tr>
<td>Stakeholder Listing Methodology</td>
<td>29</td>
</tr>
<tr>
<td>Water stakeholder power analysis - Venn Diagramming Methodology (See example of diagram below)</td>
<td>32</td>
</tr>
<tr>
<td>5. Assess Vulnerability and risk</td>
<td>34</td>
</tr>
<tr>
<td>IV. Step 3 –Analyzing water resources issues and opportunities and prioritising actions</td>
<td>35</td>
</tr>
<tr>
<td>IV.1. Purpose</td>
<td>35</td>
</tr>
<tr>
<td>IV.2. Expected outputs</td>
<td>35</td>
</tr>
<tr>
<td>IV.3. Methodology</td>
<td>36</td>
</tr>
<tr>
<td>V. Step 4 - Making a Water and Climate Change Adaptation Plan</td>
<td>38</td>
</tr>
</tbody>
</table>
V.1. Purpose.................................................................................................................................................. 38
V.2. Expected outputs................................................................................................................................... 38
V.3. Methodology......................................................................................................................................... 39
VI. Step 5 - Implementing priority actions relating to water resources management ......................... 42
VI.1. Purpose .............................................................................................................................................. 42
VI.2. Expected outputs................................................................................................................................. 42
VI.3. Methodology....................................................................................................................................... 42
1. Provide relevant trainings ........................................................................................................................ 42
2. Organise people ......................................................................................................................................... 42
3. Communications and information ........................................................................................................... 43
4. Learn the rules for water resources management, water rights and responsibilities of every citizen ........................................................................................................................................... 44
5. Getting resources .................................................................................................................................... 45
6. Managing resources ................................................................................................................................. 45
7. Maintenance of water conservation, storage, lifting and delivery systems ......................................... 45
8. Monitor the progress of the plan in a participatory manner .................................................................. 46
Appendix 1 ................................................................................................................................................ 47
Appendix 2: Example of water catchment hydrological map ................................................................ 49
Appendix 3: Institutions responsible for water management in Rwanda .................................................. 50
### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBA</td>
<td>Community Based Adaptation</td>
</tr>
<tr>
<td>CC</td>
<td>Climate Change</td>
</tr>
<tr>
<td>COCOF</td>
<td>Conseil Consultatif des Femmes</td>
</tr>
<tr>
<td>FONERWA</td>
<td>National Fund for Environment (French acronym)</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>GTZ</td>
<td>German Technical Cooperation Agency</td>
</tr>
<tr>
<td>IPFG</td>
<td>Initiative pour la Promotion de la Famille et du Genre</td>
</tr>
<tr>
<td>IWRM</td>
<td>Integrated Water Ressources Management</td>
</tr>
<tr>
<td>KCHDP</td>
<td>Kirambi Community Health and Development Programme</td>
</tr>
<tr>
<td>MMM</td>
<td>Medical Missionaries of Mary</td>
</tr>
<tr>
<td>NAPA</td>
<td>National Adaptation Plan of Action</td>
</tr>
<tr>
<td>PAPSTA</td>
<td>Support to the strategic plan for the agriculture transformation</td>
</tr>
<tr>
<td>RAB</td>
<td>Rwanda Agriculture Board</td>
</tr>
<tr>
<td>REMA</td>
<td>Rwanda Environment Management Authority</td>
</tr>
<tr>
<td>UNICOOPAGI</td>
<td>Union des Coopératives Agricoles Intégrées</td>
</tr>
<tr>
<td>VCA</td>
<td>Vulnerability and Capacity Assessment</td>
</tr>
<tr>
<td>VWCC</td>
<td>Village Water and Climate Change Committee</td>
</tr>
<tr>
<td>WFO</td>
<td>Water Field Officer</td>
</tr>
<tr>
<td>WRM</td>
<td>Water Resources Management</td>
</tr>
</tbody>
</table>
List of Tables
Table 1: Discuss Climate change with the villagers ................................................................................ 9
Table 2: Map Water Resources............................................................................................................. 19
Table 3: Example of historical events and trend line combined.......................................................... 25
Table 4: Example of a list of water stakeholders Rubanga and Nyarusange villages, COCOF Musambira............................................................................................................................................ 30
Table 5: Analyse issues and opportunities and prioritise actions......................................................... 35
Table 6: Example of criteria and actions prioritization (From Musambira stakeholders’ workshop December, 2015) ........................................................................................................................................... 37
Table 7: Make a village water resources management strategy and action plan ................................ 38
Table 8: ACTION PLANS ELABORATION IN GIKOMERO AND GATARE VILLAGES (CYANIKA SECTOR) ... 39
Table 9: Example of information and communication framework....................................................... 44

List of figures
Figure 1: Water cycle drawn by participants in WFO training, Kirambi Feb 2015............................... 11
Figure 2: Runoff and infiltration demonstration by UNICOOPAGI water field officer, Nyamigina, 25/02/2015 ........................................................................................................................................... 12
Figure 3: Sector Agronomist explaining Rwanda’s CC adaptation efforts ........................................ 13
Figure 4: Cyanika Sector Agronomist discussing with Gatare villagers about climate change (on the left), Gatare village water committee (on the right) ................................................................. 18
Figure 5: Villagers in a mapping exercise .............................................................................................. 21
Figure 6: Water field officers practicing participatory mapping, Kirambi, Feb 2015 ........................... 23
Figure 7: A shady location, for the comfort of mappers and a bare road, for easy view of markers: Kirambi school (on the left) and Gikomero village (on the right) ......................................................... 24
Figure 8: Mpaza water map .................................................................................................................. 24
Figure 9: Gatare village trend line about water demand, IPFG Nyamagabe ......................................... 26
Figure 10: Gikomero transect walk ..................................................................................................... 28
Figure 11: Example of a Venn diagram of Rubanga village, COCOF Musambira .................................. 32
Figure 12: Example of vulnerability matrix: Nyarugeti an Ngororero villages .................................... 34
Figure 13: Village climate and water committees presenting their village maps during stakeholders’ workshop (Gikomero village on the left and Rubanga village on the right) ........................................... 37
Figure 14: Group discussions after the village maps presentation, COCOF Musambira ..................... 38
Figure 15: Villagers preparing the trees nursery in Nyarugeti village of Tare Sector, Nyamagabe District.................................................................................................................................................. 46
Figure 16: Example of water catchment in UNICOOPAGI zone, Nyamagabe District ................. 49
I. Introduction

The aim of Trócaire Rwanda’s Sustainable Livelihoods Programme is to improve household livelihood security through increasing household food security and income from farm/off farm activities and to reduce the vulnerability of targeted households by building their capacities to cope and adapt to effects of climate variability and change. The specific objectives for the programme are:

Improved food security

Increased household income

Increased capacity for the partners and households to identify and to mitigate the risks related to the climate.

The Rwandan government’s Water Resources Management Sub-sector Strategic Plan (2011–2015) has supported the rehabilitation of water catchments, the development of rainwater harvesting initiatives and improved storm water management, climate change mitigation and improved energy efficiency. These innovations, however, must be scaled up, consolidated and shared as lessons learned across the country. The main challenge is to utilize water much more efficiently, in the context of declining water resources due to environmental degradation, climate change and an increasing population.

Within the programme, there is a pilot project entitled Water for agricultural production aiming at integrating technologies and practices in rain water & waste water management for boosting agricultural production and increasing resilience for small farmers in 9 villages located in three Districts of the Centre and South namely Nyanza, Nyamagabe and Kamonyi. It will pilot technologies and approaches to broaden the options available to poor, rural communities to manage water more efficiently and sustainably, in the context of limited resources and climate threats.

This project seeks to reduce vulnerability to climate change by supporting the communities to apply a range of technologies to harvest and use rainwater, together with the recycling of the water used for other domestic activities. This will be carried out in conjunction with community sensitization on climate change adaptation technologies and practices, leading to the development of local community Integrated Water Resources Management plans. The project will document and disseminate the approaches behind the technologies and practices that are supported by the project for further learning, duplication and advocacy work for the future.

*The overall objective of the project*

The project will enhance the capacity of small-scale farmers to apply rainwater harvesting and wastewater technologies for agricultural production and thereby increase resilience to climate change in four “Cells” (communities) in Rwanda.
The project outputs will include:

**Output 1:** Community in 8 villages are educated in climate change adaptation practices & planning;

**Output 2:** Roof water harvested and used for vegetable production by MHHs and FHHs;

**Output 3:** Waste water recycled and used for vegetable production by MHHs and FHHs;

**Output 4:** Climate Change Adaptation technologies and practices in 4 cells are documented for community, partners’, Trócaire’s and external learning.

This manual for preparation of a community-based adaptation plan with focus on water resources relates to Output 1. It is primarily a guide for Water Field Officers who are working with Community members to achieve the following five goals:

**Goal 1:** Discussing climate change impacts in their villages with a particular focus on water resources;

**Goal 2:** Assessing opportunities, capacity, vulnerability and risks;

**Goal 3:** Analysing issues and opportunities and prioritising actions;

**Goal 4:** Making Village Water and Climate Change Adaptation Plans;

**Goal 5:** Implementing Priority Actions relating to Water Resources Management.

The five headings above form the five main steps of the Village Water and Climate Change Planning Process and are explained in detail in each chapter. The water Field Officers received a short training course in using the manual and have so far reached the end of Step 4. Their experiences and those of the villagers are reflected in comments, tips and photos throughout the draft of the manual. The manual will be published in Kinyarwanda and shared widely in Rwanda.

This manual draws heavily on material from CARE International’s CBA and VCA Handbooks, toolkits and guides found on the following website - [www.careclimatechange.org](http://www.careclimatechange.org) and also from other sources referenced throughout.

*Bizimana, Xavier; Gasasira, Claudien; Hogan, Rose; Karulinda, Emmanuel; Ngabo, Janvier; Safari, Jean Baptis and Umuhire, Marie Louise, August 2016.*
II. Step 1 - Discuss climate change impacts with a particular focus on water resources

II.1. Purpose

The purpose of Step 1 is to meet all the villagers (women, men, young people and children) and introduce the following points to them:

- Explain the purpose of water and climate change project.
- Discuss climate change focusing on the impacts that the villagers see already, the impacts that the scientists forecast for Rwanda
- Explain Climate Change Adaptation, Rwandan National Adaptation Plan (NAPA) and the priority of Integrated Water Resources Management.
- Explain the five steps that the project is suggesting to the village for making a climate change adaptation plan focussing on water resources.
- Request the villagers to elect a team which will work with the project (the Village CC and Water team). Suggest criteria for selecting the team. Make a deadline for the first meeting of the team.

II.2. Expected Outputs

1. The whole village understands the project purpose, climate change adaptation and has agreed to collaborate with the project.
2. The villagers agree that a village water and climate change team will be selected.
3. The village leaders agree to keep records of the community water and climate change adaptation plan in a public file.

*Table 1: Discuss Climate change with the villagers*

<table>
<thead>
<tr>
<th>Step 1. Discuss Climate Change with the villagers</th>
<th>Activity</th>
<th>Who</th>
<th>Methods</th>
<th>Materials</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>One or more Public meetings with all (&gt;75%) villagers to discuss climate change and request the design of a temporal Village Climate Change and Water Team</td>
<td>All villagers, and Village leaders Cell and Sector leaders and Extension workers. Your organisation’s boss. A Minute-taker/secretary. Writer/recorder for flipchart notes.</td>
<td>1. Plenary presentations and discussions. 2. Separate groups (Men, women and young people) Discussions.</td>
<td>1. Project description. 2. Information on climate change in Rwanda. 3. Definition of Climate Change Adaptation. 4. Five-step process for Village Adaptation planning. Flipchart paper, marker pens, stick-its. Note books, paper. Big File folder, puncher, stapler and staples for the Village to record their CC Adaptation planning activities.</td>
<td>2 hours per meeting.</td>
</tr>
</tbody>
</table>
II.3. Methodology

Before starting, ask the village leader to appoint a person to take minutes of the meeting, recording what is being presented and said by all participants.

1. Explain the purpose of the Water and CC project.

Introduce yourself, the water field officer and your organisation. Tell the villagers the purpose of the project and what the project is intending to do in Rwanda and in this village. Tell what the project duration is, that it is just a pilot project and that this is one of the first villages to be selected. Explain that some households have been selected for rainwater harvesting interventions, but that the project wants the whole village to benefit by improving management of the water resources to become more resilient to climate change.

2. Discuss Climate Change – the impacts that the villagers see already, the impacts that the scientists forecast for Rwanda.

*Villagers views*

Get *villagers views* on Climate Change through questions like:

- “What do you understand by climate change?”
- “How does *climate change* affect *water resources* in rivers, springs, field crops and homes?”
- “What *impact* has this *on your lives*?”

Consider answers from two women, two men and two young people. Ask the village recorder to write the key points on the flipchart.
The water cycle and climate change

Draw the water cycle and explain it then ask related questions

Box 2. The Water Cycle

“The continuous process by which water circulates throughout the Earth and the atmosphere via evaporation (from water bodies), condensation (in the clouds), precipitation (rain and snow), and transpiration from plants and animals”

Figure 1: Water cycle drawn by participants in WFO training, Kirambi Feb 2015

-“How can climate change affect the water cycle?”
-“How can people affect the water cycle?”

Record the replies. Ensure that both positive and negative impacts are discussed.

Runoff and infiltration demonstration

Perform a practical demonstration on how water infiltrates (is absorbed) more when the land is covered by vegetation as follows.

You will need two one-litre containers of water. Find an equally sloped area of ground part of which has vegetation (e.g. grass) and part of which is bare. Pour equal amounts of water at the same speed down the vegetated and the bare areas.

Ask the participants “what is the difference?”

The participants should be able to observe that there is far less run-off of the water from the vegetated area.

You can also ask them “What is the reason behind the observations you have made?”
Figure 2: Runoff and infiltration demonstration by UNICOOPAGI water field officer, Nyamigina, 25/02/2015

**Own Catchment map**
Show the villagers the catchment map for their area (see Annex 2) and describe the main features. Encourage discussion and the contribution of more details to the map.
Climate Change forecast for Rwanda

Present the current information available about the expected changes in climate in Rwanda. For example the information in the Box 3 below which has been collected from government documents will assist you in your presentation.

Box 3: Climate Change forecast for Rwanda (various sources)

**Temperatures are rising, rainfall is uncertain (probably can increase) and the seasons are shifting.**

Climate model scenarios show future increases in mean annual temperature of up to 3.25°C by the end of the century. Changes in rainfall are more uncertain, though most of the models show that rainfall will increase. These projections are based on downscaling of global climate models to a single station in Rwanda (Kigali Airport); limited regional climate modelling has been carried out that captures Rwanda’s unique regional setting and climatology.

**Temperatures: Minimum and maximum**

Analysis of historical temperatures at Kigali indicates that minimum temperatures have been rising faster than maximum temperatures, but with a general overall rise in temperature particularly since 1992. All of the climate model scenarios show future increases in mean annual temperature in future years. The CCE data, based on downscaled data for Kigali’s airport station, reports an increase of average maximum monthly temperatures of around 1.5 to 2.7 °C (for a business as usual, no mitigation, scenario) over the range of models by the 2050s (2046 -2065), with greatest warming from July to September. The trends in monthly average minimum temperatures project a rise of between 1.7 to 2.8 °C for 2046-2065, with the most warming occurring in June to August.

**Rainfall – amount uncertain with a shift in seasons**

Changes in precipitation are more uncertain. The majority of the projections indicate that average annual rainfall will actually increase, particularly in some seasons, indicating a potential strengthening of the rains which is important in relation to flood risk. However, some models show reductions in rainfall in some months.

A shift in the timing of seasons is already being reported in certain regions. More extreme rain conditions –short heavy burst of rain and longer dry periods. Floods and droughts could both become more frequent.

Get the villagers’ views on what Climate Change Adaptation means:
- “What do you understand by climate change adaptation?”
- “How do you think this village can adapt to climate change?”
- Look at the answers and ask:
  “Do you think that the adaptation methods you have proposed are truly sustainable?
  Might some of them be damaging your resources? Could you continue to adopt
  those methods in the long-term?”

Formal Definition of Climate Change Adaptation

Write a formal definition of Climate Change Adaptation on a flipchart and read it out to
the villagers.

- Ask if they agree with these definitions.

Box 4. The UNFCCC definition of Climate Change Adaptation;
“Actions taken to help communities and ecosystems cope with changing climate condition.”

Box 5. The IPCC definition of Climate Change adaptation;
“Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities”

- Write their comments on the flipchart.

A good adaptation plan

Explain the characteristics of a good Climate Change Adaptation plan as follows:-
- Oriented towards longer term livelihoods security
- A continuous process
- Results are sustainable
- Uses resources efficiently and sustainably
- Involves planning
- Combines old and new strategies and knowledge
- Focused on finding alternatives.

Ask the villagers “What else do you think would be important in your village’s plan?”
Rwanda’s Adaptation Plans

Present Rwanda’s National Adaptation Plan of Action (NAPA)

-Give a presentation about Rwanda’s government efforts to promote adaptation to Climate Change. You will get information about this in Box 6 below.

-Perhaps you could invite the District agronomist, the environmental coordinator, Sector agriculture officer, the cell leader or another community leader to present this part?

-Ask the participants’ for comments and questions
-Answer any questions for which you have the answers and note the other questions and promise to look for answers.

Box 6: Rwanda’s NAPA

Rwanda was one of the first countries in the world to prepare an adaptation action plan (in 2007) Rwanda made Integrated Water Resources Management Planning a priority. The second priority is weather and water information forecasting and provision. The government set up the Department of Climate Change and International Organisations (DCCIO) under REMA. REMA and RAB have trained local government official and members of the Women’s council on Climate Change and put in both automatic and manual weather stations. It has also built 408 rainwater harvesting tanks and 28 ponds and trained technicians. Water Resources are still a priority and the Rwanda Natural Resources Authority has a department for Integrated Water Resources Management. The Water Law of 2008 Article 24 provides for the establishment of Local Water Associations giving the village women, men and young people a role in managing their own water resources.

-Ask if there have been any Climate Change activities in their village previously.
-Discuss and clarify information about what has already been done regarding Climate Change.

-Record villagers’ reactions

4. **Explain the five steps that the project is suggesting to the village for making a climate change adaptation plan focussed on water resources.**

-Write down the five steps on a flipchart and explain them
  1. Discussing climate change impacts in their villages with a particular focus on water resources.
  2. Assessing opportunities, capacity, vulnerability and risks.
  3. Analysing issues and opportunities and prioritising actions
  4. Making a climate change adaptation plan
  5. Implementing priority actions relating to water resources management.

-Request the meeting to comment on the proposed process.

-Record and discuss their comments/changes

-Request the meeting to approve the five-step process.

5. **Request the villagers to select or elect a team which will work with the project – the Village Climate Change and Water Committee**

-Explain that it is the villagers who are responsible for their own climate change adaptation plan and that they will need to decide on a team (a small number of women and men) to follow the five steps.

-Explain that you would like to work with the team and that the team will be responsible to the whole village as represented by the villager leader.

-The team will report back to the village leader who will call public meetings at regular intervals.

-Ask if there is any team or committee who is already in existence which has water as responsibility.

-If yes, ask if the team is active and effective.

-Ask the villagers if the team members fit the criteria below.

-If the team is lacking any of the needed qualities, ask them if they would like to improve the current team, or prefer to disband it and make a new team.
-Suggest criteria for selecting or evaluating a team (see Box 7)
-Ask the villagers how they will select the team.
  - Will they do it by sub-areas?
  - By women’ and men’ separate selection?
  - Will they do it today or do they want to do it later? When?
  - Would they like your support to facilitate the selections?
  - Get agreement on how and when the team will be selected and ready to meet you.

-Make a deadline for the first meeting of the team.

Box 7. Criteria suggestions for Village Water Resources Committee membership
- 10 to 12 people.
- 50% female and 50% male.
- Represent every sub-area of the village.
- Age - over 18 years.
- Represent old, youth, disabled.
- Represent all types of water users.
- Not necessary to be literate.
- Honest.
- Committed to village development.
- Resident.

6. Before Closing the Public meeting

Folder for the village records

Present a folder to the village leader and explain that is the village recording place for the village adaptation planning process.

Ask the leader to make it available to all the villagers so that they can understand what is happening and be involved when they can.

Hand over the flipchart sheets, with drawings from this meeting for the villagers to keep.

Reporting commitment

Mention when you expect to send your report of the meeting back to the village.

Say thanks and mention when the next public meeting is expected.
7. After the Public Meeting

- Write up a report of the public meeting.
- Share the report with the village.

*Figure 4: Cyanika Sector Agronomist discussing with Gatare villagers about climate change (on the left), Gatare village water committee (on the right)*
III. Step 2 - Assess opportunities, capacity, vulnerability and risks

III.1. Purpose

The purpose of Step 2 is to facilitate the community to map their water resources and to identify opportunities, vulnerabilities and risks. Then to list experience and capacity in water resources management; list this information in preparation for discussion at a public village meeting at which the challenges and opportunities will be prioritised.

III.2. Expected Outputs

1. Village map with all the key water resource features, risks and vulnerabilities.
2. List of opportunities for improving Water Resources Management in order to be more resilient to climate change.
3. List of capacities (human skills, human organisation etc.) which can help with better WRM.
4. List of vulnerabilities, challenges and opportunities which are recommended as priorities.

Table 2: Map Water Resources

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Prepare Village WCC Team for Step 2 practice</td>
<td>WFO, local authorities and VWCC team</td>
<td>Group work, mapping practice.</td>
<td>Sticks, stones, leaves, ashes, seeds etc. Flipchart paper, pens pencils, erasers, notebooks, camera</td>
<td>4 hours</td>
</tr>
<tr>
<td>2.2</td>
<td>Map water resources of the village with village members</td>
<td>VWCC Team with 3 groups – women, men and young people.</td>
<td>Three separate mapping activities. Consolidation of the three maps into one.</td>
<td>Sticks, stones, leaves, ashes, seeds etc. Flipchart paper, pens pencils, erasers, notebooks, camera</td>
<td>1 day</td>
</tr>
<tr>
<td>2.3</td>
<td>Verification visit to risk and opportunity sites.</td>
<td>VWCC team and WFO</td>
<td>Transect walk taking photographs and geo-referencing the</td>
<td>Camera, G.P.S.</td>
<td>4 hours</td>
</tr>
</tbody>
</table>
### II.3. Methodology

#### 1. Prepare Village WCC Team

Give general advice about participatory work in villages, being polite and inclusive to everybody. See advice in Appendix 1.

**Prepare VWCC Team for the process**

- Explain and decide the content of the village water resources map.

- **Water resources**: rivers, streams, lakes, springs, wells, water holes, domestic water supply systems (intakes, pipes, taps, tanks), rainwater harvesting cisterns and tanks etc.

- **General relief features** and other natural features (hills, escarpments, drainage features, natural water sources, vegetation types, quarries, clay pits, mines fields etc).

- **Boundaries** of the village

- **Features in adjacent villages** which influence the water resources here. E.g. forests, river sources, irrigation scheme upstream, mine, factory effluent, etc.

- **Cropping and grazing** areas.

- **Settlement and buildings**


<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.4</strong></td>
<td>Assess WRM capacity – individuals and organisations.</td>
<td>VWCC team and WFO with women, men and young people representatives.</td>
<td>List and Venn Diagram of stakeholders in WRM -Who owns controls and manages water now? -Who has special skills in water management?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.5</strong></td>
<td>Assess vulnerability and risk.</td>
<td>VWCC team and WFO with women, men and young people representatives</td>
<td>Risk and vulnerability matrix and group discussion.</td>
</tr>
</tbody>
</table>
- **Risk areas**: with specific problems gullies, land slippage, terrace breakdown, water shortage, very sandy soils, soils with little organic matter, flood, weak soil structure, bare hilltops, high run-off from new road, activities in adjacent villages…

- **Opportunities**: untapped resources or innovations that some few are doing now e.g. quarry which could form a pond site, natural stone formation which could form run-off catchment site, road which could supply run-off water, in-field opportunities to trap water (mulching, shading, pitting, mixed cropping), buildings which could collect water for communal use, people who are experienced in water conservation…

- **Trends in water resources quantity and quality**: what is getting better? What is getting worse? Since 1965 what can they remember about the water resources? In 1965, 1975, 1985, 1995, 2005, 2015 or any year in between did anything major happened, e.g. drought, flood, landslide, river became seasonal?

- Ask “Is there anything else that the VWCC team thinks is important to include in the map?”

The villagers were terrific, they know so much and, once you give them the idea of what to do, they are very capable of doing it themselves. I learnt a lot from them. **Water Field Officer**.

Women were the ones who knew most about water points and high risk erosion zones. Men could tell you about forestry and banana plantations. **Water Field Officer**.

*Figure 5: Villagers in a mapping exercise*
- Explain the process of mapping and practice it together

- The map is developed by community members from all villages in separate groups for women, men and young people
- The mapping is done outdoors on clear ground with shade.
- The VWCC team facilitates the mapping process.
- They (community) draw the map at an appropriate spot on the ground using locally available materials i.e. ashes, sticks, leaves, stones, soil, flowers, seeds etc.
- The facilitator ensures that all members are able to participate and follow the process.
- The facilitator ensures that at least one note-taker is recording the names of the rivers, wells, springs, and other significant resources are written down.
- The facilitator ensures that a volunteer/s have a pencil and eraser and blank paper to sketch a draft of the map during the process.
- Once the community has finished, the facilitator should interview/probe the map to bring out important issues.
- The maps are then presented to all three groups in plenary for verification and adoption of one consolidated map.
- The VWCC Team and facilitator transfer the map together with all the details provided by the community onto the flipchart sheet.
- The facilitator photographs the map and leaves it to the VWCC Team in the village.

- Practice the mapping yourselves

- Spend at least 30 minutes practicing the mapping.
- Make sure that each person understands what to do, how to get it started, how to include everyone, how to transfer the map onto a flipchart
- Make sure each VWCC Team member has the materials needed; pens, pencils eraser, flipchart paper.

- Make a timetable of work

- Discuss the village area where it is appropriate to do the mapping. Should the women be in one sub-village, the men in another and young people in another? Should the VWCC Team split up, who is going to facilitate which group and where?
- When will the VWCC team do the mapping, how will they assemble the people, do they need to get the village leader to call the mapping sessions?
- Agree on the timetable for mapping.

- Agree on a place and time for bringing all three maps together.
Box 8. Reflections on Participatory Mapping of Water Resources

(From the water field officers training at Kirambi, Feb 2015)

- Mapping can be difficult to start, but once you begin everybody wants to join in. Have a good, but short explanation. Then get the first marker (e.g. vine to represent the main river) on the ground quickly. It is like riding a bicycle, the quicker you get onto the bicycle the quicker you understand how to ride it!
- Mapping needs a lot of people; because different people know different things about the locations of resources and one can say the river is here, another over there!
- Mapping needs various categories of people by age, gender, livelihood activities/profession/enterprises, knowledge, experiences. This helps get true information.
- Mapping needs people from the precise village, who know it well.
- Mapping needs good facilitation to get agreement. The facilitator should be inventive and able to ‘think on her/his feet’.
- Mapping is quite complicated.
- Mapping can help ‘old hands’ to learn new things that they thought they were familiar with.
- Mapping is only 2-dimensional, so you must also do transect walks to understand the topography of the village.
- The details of the map need to be verified by observing directly with your own eyes. This can be done by transect walks which represent all the main features of the village.
2. Mapping of village water resources by villagers facilitated by VWCC

The process;

-VWCC Team conducts the mapping with at least 3 villager groups.
-The three maps are discussed, verified and consolidated into one map.
-The final map is discussed.
-The risks, vulnerabilities, opportunities are listed for the whole village.
-The trends in water resources condition are listed for the whole village and a historical events and trend line is written.

![Figure 7: A shady location, for the comfort of mappers and a bare road, for easy view of markers: Kirambi school (on the left) and Gikomero village (on the right)](image)

![Figure 8: Mpaiza water map](image)
Table 3: Example of historical events and trend line combined

<table>
<thead>
<tr>
<th>Year</th>
<th>Water resources 1940-2015 Gatare village / Cyanika-Nyamagabe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>Drought (Ruzagayura)</td>
</tr>
<tr>
<td>Trend</td>
<td>Decrease of the available water</td>
</tr>
<tr>
<td>Trend</td>
<td>Water demand is increasing in the villages due to population growth</td>
</tr>
<tr>
<td>Trend</td>
<td>Natural vegetation and forest has decreased</td>
</tr>
<tr>
<td>Trend</td>
<td>Water selling became more common and water prices are increasing.</td>
</tr>
<tr>
<td>Trend</td>
<td>Agricultural production highly affected</td>
</tr>
<tr>
<td>Trend</td>
<td>Terracing and other slope protection are becoming more common - reduces run-off.</td>
</tr>
</tbody>
</table>
Example of trend line

![Water demand in Gatare village](image)

**Figure 9: Gatare village trend line about water demand, IPFG Nyamagabe**

3. **Verification visit to the key sites: transect walk**

**Team preparation**

- Prepare the VWCC team (map, paper, pencils with erasers, G.P.S, camera, decide roles)
  - Who will take photographs?
  - Who will draw the route?
  - Who will take notes to describe sites (slope, soil type, water resource, risk type, opportunity type, population density, current uses)?
  - Who will interview the route’s residents?

**Route**

- Decide the transect route by using the village water resources map sketched in the previous step and choosing a route which
  - includes the major topographical features (e.g. highest hill, biggest valley) and water resources
  - Sketch a line A to B across the map showing the intended route.
  - Conduct the transect walk from A to B
  - Stand at the start of the walk (A) and take a broad view of the direction you will go.

**Recording by sketching**

Sketch the team’s impressions of the major features of topography (hills, valleys), water bodies (rivers, lakes, ponds) and major infrastructure (school, mosque, church, go down etc.) along the top of a sheet of plain paper. Using a ruler, draw vertical lines to separate the major features observed between A and B. You will have a column per major feature/zone. On the left hand side prepare a column for the features which you will observe including soil, water, vegetation, human settlement, socio-economic conditions, agricultural practices, water conservation measures etc. and make a row across to the right hand side of the page to represent each characteristic.
Look close to you and note the characteristics of the Soil, Water, Vegetation, socio-economic indicators.

Note the problems and the opportunities that you can see close to where you are standing.

**Walking and observing**

- Walk on until you reach the next change in the topography, or water or vegetation. Make a stop.
- Record the team’s impressions of the soil, water, vegetation, socio-economic indicators, problems and opportunities as above.
- Continue walking until the next major change etc., until you have reached the final point of the transect line.

**Write-up for sharing with the whole community**

- Write up the transect description; see example below.
<table>
<thead>
<tr>
<th>Transect walk: Gikomero transect walk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cell 1</strong></td>
</tr>
<tr>
<td>Senescence - dry</td>
</tr>
<tr>
<td>Old trees</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Figure 10: Gikomero transect walk
4. Assess water resources management capacities (individual and organisations)

-Prepare the VWCC Team by

- Explaining the listing methodology
- Explaining the Venn diagram methodology
- Practicing the activity
- Assisting the VWCC Team to plan the discussions with women, men and young people in separate groups.
- Ensuring the VWCC Team has cameras, pens, paper, scissors, flipchart paper etc.

Stakeholder Listing Methodology

The following questions should be asked to the team for the listing:

- “Who is involved in using and managing water in this village?”
- “What is their role?”
- “What skills do they have?”
- “What are the issues with their involvement in water use and/or management?”
- “What impact, positive or negative, do this stakeholder/stakeholder group have on the water resources?”

Make a list of the answers (see the example list of stakeholders below)
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Role</th>
<th>Skills</th>
<th>Issue</th>
<th>Impact on water resources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local authorities at cell &amp; sector level</td>
<td>Implement the water related policy from the higher levels, monitor all things happening in the sector, supervise the water use and provide information for future plan.</td>
<td>Skilled staff in different domains (Socio-economy, land management, agronomy, environment, education and policy) and leadership.</td>
<td>Have to implement the higher level plan which doesn’t consider much the detail needs from the lower level (household). Limited budget for potable water distribution. WRM not applied at sector level.</td>
<td>People walk long distance to get water. Water resources used individually, no WRM system. Rivers and streams not controlled. Erosion and variability of climate disturb the farmers cropping plans.</td>
</tr>
<tr>
<td>NGOs in agriculture support (COCOF, IMPUYABO, Duhamic, RWARRI)</td>
<td>Help farmers in capacity building, provide the agro inputs, apply new technologies and advocate for farmers rights.</td>
<td>Expert in agronomy, water management, advocacy, crop management, post harvesting technology and soil protection.</td>
<td>Financial dependence, High support needs from the population, low-level skills of the famers, limited resources.</td>
<td>Implementation of WRM and climate change projects for more resilience. Improve population capacity and knowledge.</td>
</tr>
<tr>
<td>Religious institutions (Catholic church, EPR, ADEPR and Islam,)</td>
<td>Spiritual leadership for the population, own the big parcels and building. Promote development projects.</td>
<td>Mentorship. Opportunities to reach wide audiences.</td>
<td>Water from the buildings not controlled, low connection with the WRM team.</td>
<td>Lack implication in management of water resources. Cause erosion from their estate/buildings and compounds.</td>
</tr>
<tr>
<td>Farmers and livestock keepers (Women and men)</td>
<td>Till the soil every season, destroy the soil cover; accelerate the water evaporation and soil moisture going down</td>
<td>Food production through management of crops, management of soil, protect environment. Some use compost, grass</td>
<td>Dependence on weather seasons, small estates, soils moisture deficits, high erosion, low agro technology, low</td>
<td>Pressure/overuse of land (evaporation, soil moisture deficits, erosion) Less productivity, less benefit from water resources.</td>
</tr>
<tr>
<td>Role</td>
<td>Activity</td>
<td>Need</td>
<td>Implication</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Retailers (Women and men)</td>
<td>Sell the crop and agro-inputs, own the farms.</td>
<td>Have middle income to manage their soil,</td>
<td>Less implication in water resources management,</td>
<td></td>
</tr>
<tr>
<td>Miners</td>
<td>Provide casual waged labour</td>
<td>High demand of water, pollute the rivers water, change valley or the marshland productivity, water management conflict, land destruction, erosion</td>
<td>Pollution, erosion</td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>Education to the future generation</td>
<td>Academic leadership, education</td>
<td>Awareness raising, education about climate change and land protection, can serve as an example in WRM.</td>
<td></td>
</tr>
<tr>
<td>Technicians</td>
<td>To provide technical services.</td>
<td>Install the water harvesting infrastructure, and train others in water maintenance</td>
<td>Local service providers to handle water management technical issues.</td>
<td></td>
</tr>
</tbody>
</table>
Water stakeholder power analysis - Venn Diagramming Methodology (See example of diagram below)

- List powerful actors and less powerful actors in terms of WRM
- Cut circles of paper; big ones for powerful actors, small for powerless actors and medium sized for in between.
- Put the name of each actor on the correct size of paper.
- Write the word ‘Water’ on the middle of a flipchart.
- Ask the participants to place the circles close or far from the word ‘water’ according to their influence on what happen to the water resources.
- Ask the participants if they are happy with the current situation
- If so, why? If not, why not?
- Ask the participants what they would like to see different in 5 years ‘time
- Record all the comments
- Take a photo of the diagram.
- Leave the diagrams with the VWCC team.

Please NOTE: Women, men and young people may have different opinions on different stakeholders in water resources use and management in the village. Retain all opinions in the report.

Box 9. Venn diagram

This Venn diagram made by the community shows how the actors play roles in Water Resource Management; individually or in organizational manner. By this picture, three organizations (Musambira Sector, COCOF and IMPUYABO), have been placed nearer the WRM circle because they work closely with the farmers and their support in water management is recognized by the population. At the second range, we find Catholic Church and women which are the principle consumers and are very concerned by water shortage problems. Other consumers like the miners, retailers are classed far from the big circle to signify that there is no close connectivity in WRM.

Figure 11: Example of a Venn diagram of Rubanga village, COCOF Musambira

-VWCC Team conducts WRM capacity assessment
- Groups are invited to venues.
- Listing and Venn Diagramming takes place.
- The diagram is photographed and retained at village.
- The report with comments is written and stored at the village.
<table>
<thead>
<tr>
<th>Box 10. Field work reflections (From WFO Training, Kirambi Feb. 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
</tr>
<tr>
<td>• Make sure the purpose is understood by all before hand</td>
</tr>
<tr>
<td>• Make sure the meeting rules are discussed at the beginning of each meeting.</td>
</tr>
<tr>
<td>• It is hard to keep the attention of everyone for a long exercise; provide a break and plan to do a small amount each day.</td>
</tr>
<tr>
<td>• Men tend to contribute more. Encouraging women takes a conscious effort but it does work.</td>
</tr>
<tr>
<td>• Give enough time for explanations by the participants.</td>
</tr>
<tr>
<td><strong>Historical water events</strong></td>
</tr>
<tr>
<td>• It is easy to get information about big events from people. People remember big events like floods and droughts.</td>
</tr>
<tr>
<td><strong>Trends about water resources</strong></td>
</tr>
<tr>
<td>• Trends can be difficult to find, especially related to the specific issue of water or with young people who have few years to reflect backwards on.</td>
</tr>
</tbody>
</table>
5. Assess Vulnerability and risk

- Prepare the VWCC Team for the process;
  - Prepare vulnerability matrix and practice completing it.
  - Prepare 3 blank matrices on double flipchart sheets for use with the three (Women, men and young people) groups.
  - Assist the VWCC Team to make arrangements to carry out the assessment with groups of women, men and young people.
  - The VWCC carries out the vulnerability assessment with women, men and young people.

![Figure 12: Example of vulnerability matrix: Nyarugeti an Ngororero villages](image)

**Figure 12: Example of vulnerability matrix: Nyarugeti an Ngororero villages**
IV. Step 3 – Analyzing water resources issues and opportunities and prioritising actions

IV.1. Purpose

The purpose of Step 3 is to:

1. Present the reports, maps, diagrams and findings of the participatory studies, as well as any other information you\(^1\) or the water project consultant\(^2\) have assembled about the hydrology and climate of the village, to the whole village population.
2. Get the villagers views.
3. Prioritise the most important opportunities and challenges relating to water resources management.
4. Agree who should be responsible for water resources management in the village and what their tasks are.

IV.2. Expected outputs

1. Most important water opportunities and challenges selected
2. Actions prioritised for immediate plan
3. Responsible team/committee for WRM decided.

Table 5: Analyse issues and opportunities and prioritise actions

<table>
<thead>
<tr>
<th>Step 3. Analyse issues and opportunities and prioritise actions</th>
<th>Activity</th>
<th>Who</th>
<th>Methods</th>
<th>Materials</th>
<th>Time needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.1</td>
<td>Prepare Village CCW Team for Step 3.2</td>
<td>WFO and government extension workers. VWCC Team</td>
<td>Organise results from Step 2. Make a summarised report of the findings. Decide who from the VWCC presents what.</td>
<td>Flipchart paper, pens, pencils, camera. Beans or stones for voting/ranking priorities</td>
</tr>
<tr>
<td></td>
<td>Practice Step 3.2</td>
<td>VWCC Team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2</td>
<td>Facilitate the whole</td>
<td>VWCC Team</td>
<td>Public</td>
<td>All reports, maps, photo</td>
</tr>
</tbody>
</table>

\(^1\) You, the WFO should collect any information, maps, reports which are available in the IPFG, COCOF, UNICOPAGI or KCHOP offices about the two villages. You should also request the Sector and District to supply you with copies of any maps and plans they have which include agriculture or land use or water developments in each of the villages. You should also check REMA, RNRA, DCCIO, RAB and Minagri or other relevant websites and contacts you have to find out their activities and plans in the village or the area. You should also research your village on Google earth.

\(^2\) The project engaged two consultants to help research the water resources and opportunities in eight villages: 1. Rainwater harvesting consultant. 2. Water resources and hydrology specialist.
village to analyse water issues and opportunities and to prioritise challenges and opportunities for action.

Meeting of all villagers (at least 75%). Vote/ranking on priority issues and opportunities in groups of women, men and young people.

and diagrams from step 2. Summarised presentations. Flipchart paper, pens, pencils, camera. Beans or stones for voting/ranking priorities.

IV.3. Methodology

Facilitate the villagers to discuss and decide the criteria for selecting the problems to act on. Examples of criteria could be;

- Quickest returns,
- Benefits many people
- Easiest to do technically within the capacity of the villagers
- Best returns to investment of time and labour
- Most sustainable solution
### Table 6: Example of criteria and actions prioritization (From Musambira stakeholders’ workshop December, 2015)

<table>
<thead>
<tr>
<th>Action</th>
<th>Identified activities</th>
<th>Quickness of return</th>
<th>Health urgency</th>
<th>Technical capacity</th>
<th>Affordable budget</th>
<th>Meet population needs</th>
<th>Benefits spread widely</th>
<th>Priority rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase of Agriculture production</td>
<td>Promotion of the vegetables</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production of the pineapples</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>Monitoring of rain and temperature for agro-purposes.</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>33%</td>
</tr>
<tr>
<td>Innovative income generating activities for HH</td>
<td>Mushroom</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>87%</td>
</tr>
<tr>
<td></td>
<td>Piggery farming</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>Poultry farming by self-helping groups</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>87%</td>
</tr>
<tr>
<td></td>
<td>Promoting the horticulture production</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Support of existing population tontine (umugoroba w’abayeyi, ibimina)</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>83%</td>
</tr>
<tr>
<td>Conservation of soil and biodiversity (protection of vulnerable zones)</td>
<td>Demarcation of vulnerable zones</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>Rain water harvesting (Roof water, Ponds, training)</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>77%</td>
</tr>
<tr>
<td></td>
<td>Soil water retention (terracing, agroforestry, training))</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>53%</td>
</tr>
<tr>
<td>Environmental Health</td>
<td>Hygiene and sanitation at HH level</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>87%</td>
</tr>
<tr>
<td></td>
<td>Installation of ECOSAN latrines</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>Water spring improvements</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>77%</td>
</tr>
<tr>
<td></td>
<td>Water supply network extensions</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>Family planning&amp; good nutrition</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>77%</td>
</tr>
<tr>
<td>Less rank, support need</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Ranking criteria                                                      | 80%            | 83%            | 53%            | 49%            | 84%            | 90%            |                        |              |

---

**Figure 13: Village climate and water committees presenting their village maps during stakeholders’ workshop (Gikomero village on the left and Rubanga village on the right)**

**Box 11. Village maps presentation**

After the village map presentation, discussions in groups are organized in order to decide on the most important water opportunities and challenges and thus prioritise actions for immediate plan.
V. Step 4 - Making a Water and Climate Change Adaptation Plan

V.1. Purpose

Make an action plan for each priority decided in the previous step. Provide details of activity, sub-activities, who will do what, where it will be done, what resources will be needed, where the resources will be found, when it will start and be finished.

Present the action plan to the village government, the public and any possible donors.

V.2. Expected outputs

1. A village water resources strategic plan for 1-5 years.
2. A detailed water resources action plan for 1 year.

Table 7: Make a village water resources management strategy and action plan

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Village WCC makes a draft strategic plan using the outputs from the public meeting in Step3.</td>
<td></td>
<td>WFO (as facilitator) and VWCC Team</td>
<td>Desk work in small groups. Prepare a framework such as the example below.</td>
<td>Flipchart paper, pens, pencils erasers.</td>
<td>2 days</td>
</tr>
<tr>
<td>4.2 For each action decide targets, activity, sub-activities, resources time frame and responsibility.</td>
<td></td>
<td></td>
<td>Fill in the framework</td>
<td></td>
<td>4 hours</td>
</tr>
</tbody>
</table>
4.3 Present the Action Plan to the village leaders and the public for feedback, approval and support.

4.4 Promote the action Plan to Cell, Sector and District leaders and request inclusion in District budget. Present to prospective funders and faith leaders. E.g. private business, NGOs, donors.

V.3. Methodology

For each action discuss and decide targets, activity, sub-activities, resources, time frame and responsibility.

Please see the example action plan below. It lists the five major actions which the communities have decided to undertake, that is;

Action 1: EROSION CONTROL
Action 2: PROTECTING VULNERABLE ZONES
Action 3: RUNOFF RAIN WATER HARVESTING
Action 4: CLEAN WATER SUPPLY IN GIKOMERO VILLAGE
Action 5: RE-ESTABLISHING KAVIRI MARSHLAND IN GATARE VILLAGE

Action 1 is given in detail below showing sub-activities, resources needed, time line, responsible persons. Similar details have been elaborated for actions 2 to 5.

<p>| Table 8: ACTION PLANS ELABORATION IN GIKOMERO AND GATARE VILLAGES (CYANIKA SECTOR) |
|----------------------------------|----------------------------------|
| Action 1: EROSION CONTROL        |                                  |
| Action 2: PROTECTING VULNERABLE ZONES |                              |
| Action 3: RUNOFF RAIN WATER HARVESTING |                            |
| Action 4: CLEAN WATER SUPPLY IN GIKOMERO VILLAGE |                        |
| Action 5: RE-ESTABLISHING KAVIRI MARSHLAND IN GATARE VILLAGE |                      |</p>
<table>
<thead>
<tr>
<th>ACTION 1</th>
<th>EROSION CONTROL (Gikomero and Gatare Villages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TARGET</td>
<td>All demarcated sites affected by erosion will be protected by the end of 2016</td>
</tr>
<tr>
<td>ACTIVITY</td>
<td>SUB ACTIVITIES</td>
</tr>
<tr>
<td>1.1 Digging anti-erosive</td>
<td>1.1.1 Demarcating all zones affected by erosion</td>
</tr>
<tr>
<td></td>
<td>1.1.2 Digging new ditches and repairing the existing ones</td>
</tr>
<tr>
<td></td>
<td>1.1.3 Training on erosion control technics</td>
</tr>
<tr>
<td>1.2 PLANTING TREES AND AGROFORESTRY TREES</td>
<td>1.2.1 Survey to identify site and to know number of trees in need.</td>
</tr>
<tr>
<td></td>
<td>1.2.2 Making tree nurseries and compost</td>
</tr>
</tbody>
</table>

³ Compulsory community work as part of Rwanda’s nation-building efforts.
| 1.3 REESTABLISHMENT OF BRIDGES AND REPAIRING HOLES AND GULLIES CAUSED BY EROSION |
|---|---|---|---|
| 1.3.1 Constructing bridges 4 bridges in Gikomero and Gatare villages | *Technicians | 5 Months | *Committee  
*local authorities  
*Community (through umuganda) |
|  | *Materials for bridge construction (trees, stones, sand, hoes, cement, iron concrete,...) |  |  |
| 1.3.2 Repairing all identified gullies and holes caused by erosion | *Materials (stones, sand, required type of soil)  
* Technician | 3 months | *Committee  
*Funders  
*local authorities  
*Community (through umuganda) |
| 1.3.3 Planting trees and grasses to repaired site | *Tree transplants  
*Grasses | 2 months | *Committee  
*Funders  
*Community (through umuganda) |

| 1.4 PROTECTING ALL VULNERABLE ZONE |
|---|---|---|---|
| 1.4.1 Establishing rules and regulation for vulnerable zone protection against erosion | *Existing environment rules | 1 week |  |
| 1.4.2 Making official rules and regulation made | *Announcement (Posts)  
*Public meetings |  | *Committee  
*Community (through umuganda) |
| 1.4.3 Training committee in environment protection | *Training materials and other requirements  
*Specialist in environment protection | twice a year | *Committee  
*Funders  
*Community (through umuganda) |
VI. Step 5 - Implementing priority actions relating to water resources management

VI.1. Purpose
Implement the agreed actions in the Village Action Plans.
Formalise the village water resources management organisation.

VI.2. Expected outputs
1. An official democratically elected village WRM committee is established and working.
2. The agreed actions are being implemented.
3. The agreed actions are being monitored by the village residents through their village government or any other democratically selected monitoring body.
4. The learnings from the actions are being shared throughout the whole village and the neighbouring villages.

VI.3. Methodology

1. Provide relevant trainings
- Training in project management skills, committee administration, finance, inventory, people management
- Training in technical, land and water resources management skills
- Training in communication, education and information sharing

2. Organise people
- Clarify what body is responsible for water resources management in the village
- Check the national regulations, policies and laws for water resources administration and clarify the role of the village government in water governance.
- Find out if there is a specific statutory tool for the establishment of a village water resources management committee. If there is no specific tool, find out what type of committee and what role can comply with the policies and regulations
- Check with the relevant local authorities and relevant ministries what the requirements are in order to recognise and support the village water resources management committee in its work.
- Clarify and establish the
a. Number of members
b. Representation of different user groups
c. Terms of Reference /duties/powers of the committee members,
d. Transparency and open communications at regular agreed intervals.
e. Duration of the membership (1, 2, or 3 years to the next election)
f. Gender balance
g. Attendance rules
h. Freedom from vested interests and
i. Other rules to which the members must comply
j. Support the village government and the temporary village water resources management and climate change team to plan and run the election/selection of the formal WRM Committee.

-Check national rules for calling a public village meeting; apply them. For example:
  - The need to give notice to all villagers,
  - The dates for receiving nominations for a committee
  - The timing and location to facilitate the majority of villagers to participate.
  - The voting procedure etc.

Support the village government to comply with these rules and to run the election. When the formal VWRM Committee is elected, support them through training and on-the-job advice to gain the necessary knowledge and skills to carry out their functions.

3. Communications and information

Assist the village water resources management committee to consider who they need to communicate with, what they need to communicate about and how best to communicate with each type of stakeholder. The table below provides some suggestions. Remember that the communications need to be two-way and that collecting feedback is the key to improving the WRM methods being promoted.
**Table 9: Example of information and communication framework**

<table>
<thead>
<tr>
<th>Who</th>
<th>About what</th>
<th>When/ How often</th>
<th>What method</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village women and men</td>
<td>The national rules and regulations on WRM, rights and responsibilities of every citizen. The progress of the village WRM and CC Plan.</td>
<td>Weekly</td>
<td>Regular meetings in the village</td>
<td>Practical demonstrations in fields. Posters, group discussions and public Meetings</td>
</tr>
<tr>
<td>Neighbouring villages</td>
<td>The WRM plan of the village and how it impacts on the neighbouring villages and vice versa. Look for cooperation on shared water resources.</td>
<td>Every quarter</td>
<td>Attend their village general meeting. Invite them to own village meetings.</td>
<td>Presentation of village WRM Plan showing maps and zonations. Tour to see practical used methods.</td>
</tr>
<tr>
<td>Local authorities (especially village leaders)</td>
<td>Progress of the WRM plan.</td>
<td>Every quarter</td>
<td>Invite to the village. Invite to relevant public meetings.</td>
<td>Give a verbal and short written report</td>
</tr>
<tr>
<td>Partners</td>
<td>WRM plan</td>
<td>quarterly</td>
<td>Reporting</td>
<td>Report</td>
</tr>
</tbody>
</table>

4. **Learn the rules for water resources management, water rights and responsibilities of every citizen.**

Assist the VWCC to gain information about the following crucial issues for water resources management and to share this information with all the villagers.

a. Monitoring weather and water resources; who is responsible? (Village, Cell, Sector, District).
b. Conservation of water in the fields, at home, at livestock watering points, small industries, mining; what are the best practices, what are the government rules?
c. Early warning systems for floods and droughts; who is responsible?
d. Disaster risk reduction measures; who is responsible? What measures e.g. about emergency water supply, evacuation from land slip threat areas, long term food supply to survive drought

e. Other water-related issues relevant to each specific village.
5. **Getting resources**

Resources from the villagers, from the project, resources from government; support the VWCC to learn how to get collaboration from villagers for the conservation and management of communally-shared water resources in the overall catchment. Also facilitate the VWCC to be aware of government schemes (e.g. FONERWA) and how to access the funds and technical advice which is available under those schemes.

6. **Managing resources**

The resources will include water supply, money (bank accounts, spending, charging), and equipment. Arrange training in skills to manage and maintain these resources from the available experts. Give the VWCC practice in managing the resources supplied by the project by putting them in charge of funds.

7. **Maintenance of water conservation, storage, lifting and delivery systems**

Ensure that women and men villagers and members of the VWCC know how to manage any new structures or equipment supplied. Support the villagers and the VWRMCC to select female and male volunteers who have an aptitude for mechanical skills and arrange a training programme with a series of modules for passing on the practical skills needed. Provide training and follow-up to each trainee as well as direct checking at each household or installation to ensure that the capacity to maintain the installation/equipment has truly been acquired. When the trainees have proven their capacity arrange for their recognition as ‘Village Water Technicians’ at a public meeting of all villagers.

---

4 See building and maintenance manuals prepared by the project.
8. Monitor the progress of the plan in a participatory manner.

Support the VWCC to decide how they will monitor the village water resources management action plan by discussing the targets and considering how they will measure whether they have been achieved.
Appendix 1

Advice for working with groups of people in a participatory way (Adapted from various sources including www.careclimatechange.org)

Manage expectations

It is important to manage expectations during field exchanges. For example, the fact that this project is including all villagers and not just cooperative members need to be explained. Also the fact that only some houses will get support for building rainwater storage systems and others not, needs to be explained in the context that the overall focus is to increase the availability of water in all the land of the village and reduce the impacts of Climate Change on all households through measure to protect the landscape from erosion, from flood and drought damage.

Create and maintain a trusting and ‘safe’ space

- Allow a trusted community member or local representative to introduce the team.
- Be gracious and patient allowing the local community to ‘own’ the meeting.
- Allow everyone to introduce themselves.
- Ask permission to take photographs or video, and refrain if participants are uncomfortable with it.
- Provide refreshments if appropriate.
- Value all participants’ knowledge and experience.
- Interrupt over-active or disruptive participators and allow space for shy participants.
- Admit to and correct your errors.
- Be impartial.
- Frequently allow time for participants to ask questions.

Animate and balance participation

- Ensure that the venue is conducive to participation; not too hot or cold. Make People able to see each other.
- Develop ground rules with the participants.
- Explain the process and ensure that all understand instructions and questions.
- Support those which are shy, and gently silence those that take the floor too much or consider themselves “experts”.
- Probe for more information if the discussion is lagging, but try not to lead participants
- Find ways to allow people to drive the process (e.g. interviewing each other, taking photographs, using the GPS to mark sites of importance to them, building the map themselves, marking symbols on the matrix).
- Allow participants to raise issues, but keep the process on track. Ensure that you are moving quickly enough to cover the necessary ground in the time allocated.
**Finish gracefully**

- Discuss and agree what the next steps are.
- Schedule a time to return.
- Thank the group for their participation, and give an opportunity to ask questions.

**Records and reporting**

- Allow the participants to like and to keep the products of the discussions (e.g. drawings, your presentation, water resources maps, transect map and report, meeting minutes), photograph or make a copy and leave the original behind.

- Commit to a date by which you will have sent back your report in a format and language which the participants can understand.
Appendix 2: Example of water catchment hydrological map

Figure 16: Example of water catchment in UNICOPAGI zone, Nyamagabe District.
Appendix 3: Institutions responsible for water management in Rwanda

Figure 3
Institutional roles and relationships in the water supply and sanitation sector

MININFRA (Ministry of Infrastructure): National policies, guidelines and strategies for the WSS sector, enhancing institutional and human resource capacity of districts, monitoring the implementation of government policies. Leads WSS sector stakeholder coordination.

MINEOFIN (Ministry of Finance and Economic Planning): Responsible for budgeting and financing of WSS, participates in fixing utility rates. External Finance Unit, Central Public Investment, and External Finance Bureau manage external funds, including project approval and implementation monitoring. Key actor in improving external aid coordination.

MINALOC (Ministry of Local Government): Decentralization process, management of RWS projects by grassroots communities. Ensures local institutions contribute to effective service delivery, aiming at community and socioeconomic development. Funds small-scale WSS projects.

MINISANTE (Ministry of Health): Provides preventive, curative, and rehabilitative services. Supports MININFRA in promoting hygiene and monitoring water quality.

MINEDUC (Ministry of Education): Cooperates in implementing hygiene programs.

RURA (Rwanda Utility Regulatory Agency): Regulates water supply and sanitation services. Allows fair competition and protection of both consumers and operators, facilitates private sector involvement (PPP).

REMA (Rwanda Environmental Management Agency): Monitors and facilitates fundamental right to live in a healthy and balanced environment.

MVK (Rural town municipality) and Districts: Organize access to proper sanitation for their populations (including solid waste collection, transport and disposal). Districts are committed to agreed goals through a performance convention passed with MINALOC. They are also in charge of providing safe water and organizing supply services.

EWSA, Energy, Water and Sanitation Authority that has absorbed RECO (Energy) and RWSACO (water and sewerage). Launched in 2010.

Source: Various.
Appendix 4 References and Resources

**Government of Rwanda - documents and websites**


**Other resources**


Joto Africa Magazine . *Joto Afrika* Réseau d’Informations sur les Terres Arides Email jotoafrica@alin.net website [www.alin.net](http://www.alin.net)

PLA Notes 60, 2009. Participatory learning and action Community-based adaptation to climate change. [www.iied.org](http://www.iied.org)

Wiggins, M. 2012. CEDRA Climate change and Environmental Degradation Risk and adaptation Assessment. Tearfund UK. [www.tearfund.org](http://www.tearfund.org)