

# Practical guide

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## *Presentation of AfricaRice and Afrique-learning*

### ***AfricaRice:***

AfricaRice is a leading pan-African rice research organization committed to improving livelihoods in Africa through solid science and effective partnerships. AfricaRice is a research center of CGIAR, which is part of a global research partnership on future food security. It is also an intergovernmental association of African member countries. Today, it has 28 member countries. The mission of AfricaRice is to contribute to poverty reduction and food security in Africa through research, development and partnership activities, aimed at increasing the productivity and profitability of the rice sector so as to guarantee the sustainability of the agricultural environment.

### ***Afrique-Learning:***

Afrique-learning is a Beninese cooperative which creates and manages vocational e-learning courses specially designed for African youth. Courses are tailor-made in collaboration with experts in the field with the aim of producing interactive, illustrated, interesting and easy-to-study courses that provide the student with important information in simple and appropriate language. Learning is done independently at the student's own pace, it is assessed and a course certificate is attained following a final test. Courses are available on computer, smartphone or android tablet. They only require a very modest bandwidth and are therefore within the reach of students. Registration and classes are free.

## *Acknowledgements*

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## *Context of the guide*

This guide presents the services for carrying out structures in the field. The service provider can quickly learn about the activities, deliverables and work tools for performing a service. The description of activities and the prices of the services can facilitate the coordination and planning of a project. The approach to service is presented in the tool "Concept of "service" in implementing the Smart-Valleys approach or any other project". In an online course with the same title the service provider can learn how to perform a service.



# I. Selection of the inland valleys

## 1. Identification of inland valleys

### Activities

Identify the actors able to help find the inland valleys for phase I of the selection.

1. Identify the actors with knowledge of the sites (technicians, village chief, villagers, etc.).
2. Complete the form "List of inland valleys" by inserting the sites proposed by each actor.
3. Identify actors who will serve as guides to find these sites.

### Products to be delivered

Product	Criteria of verification
A preliminary list of inland valleys to explore in more depth with the contacts of the guides to find these inland valleys	<ul style="list-style-type: none"> <li>● The sheet must be completely filled in.</li> <li>● The sheet must include the proposed sites, the names and contacts of the guides.</li> <li>● The language used must be correct and understandable (grammar, spelling etc.).</li> </ul>

### Work tools

- A sheet of A4 paper, a pen, a notepad, a cell phone

### Service costs

Transport costs	...
Communication costs	...
Service fee	...

## 2. Exploration of inland valleys

### Activities

1. Explore the inland valleys to assess the pedological and hydrological characteristics in order to complete the biophysical diagnosis sheet.
2. Explore the inland valley, take pictures with GPS data and conduct interviews with some of the villagers to collect additional information.
3. Take pictures of each inland valley which give a real impression of the situation.

### Products to be delivered

<i>Products</i>	<i>Criteria of verification</i>
Biophysical diagnosis <i>sheet</i>	<ul style="list-style-type: none"> <li>• The sheet must be completely filled in.</li> <li>• The sheet must include the pedological and hydrological characteristics.</li> <li>• The language used must be correct and understandable (grammar, spelling etc.).</li> </ul>
<i>Folder of photos</i> of the inland valley	<ul style="list-style-type: none"> <li>• 2 overview photos of the zone from different angles.</li> <li>• 1-2 photos showing the main vegetation.</li> <li>• 1-2 photos showing waterways.</li> <li>• 1-2 photos showing the soil.</li> <li>• Photos showing others aspects such as erosion etc.</li> </ul>

### Work tools

- A camera, a hoe, a notepad, diagnostic sheet and pens

### Service costs

Transport costs	...
Communication costs	...
Service fee	...

### 3. First processing and pre-selection of inland valleys

#### Activities

1. Summarize the information by filling out the processing sheet. The most relevant data should be taken into account and ranked in order of importance into three classes:
  - a. if available: land ownership, existence of land conflicts
  - b. accessibility, cultivable area, intensity of development, cultivation, number of farmers
  - c. inland valley shape, slope, soils, the dynamics of the water table, height and extent of floods
2. Select the inland valleys which are suitable for the identification phase.
3. Insert on the processing sheet, a short observation explaining the suitability for selection.

#### Products to be delivered

Product	Criteria for verification
A list of inland valleys ranked on the basis of their biophysical and socio-economic properties	<ul style="list-style-type: none"> <li>• The sheet must be completely filled in.</li> <li>• The sheet must include accessibility, cultivable area, intensity of development, culture and number of farmers. As well as the shape of the inland valley, the slope, the type of soil, the dynamics of the water table, the height and extent of floods and finally the conclusion.</li> <li>• The language used must be correct and understandable (grammar, spelling etc.).</li> </ul>

#### Work tools

- A4 paper or a sheet to fill in, a pen, a notepad

#### Service costs

Photocopy	...
Service fee	...

## 4. First village meeting for data collection

### Activities

1. Organize a village meeting to collect additional data on biophysical and socio-economic aspects and land tenure, and assess the interest of the population in joining the Smart-valleys approach.
2. Inform farmers and other actors (e.g. village chief) in advance to ensure their participation.
3. Prepare the meeting and the topics to be discussed.
4. Address several inland valleys in the discussion during the the meeting if the village is involved in more than one inland valley.
5. Check the information collected during the meeting in the field in the next operation
6. Take pictures of the meeting.

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
The sheet with completed socio-economic data	<ul style="list-style-type: none"> <li>● The sheet must be completely filled in.</li> <li>● The sheet must include the land ownership, the mode of access, the average experience of the farmers on the site, the destination of the products, access to the market and to processing.</li> <li>● The language used must be correct and understandable (grammar, spelling etc.).</li> </ul>
A folder of photos of the meeting	<ul style="list-style-type: none"> <li>● Several photos showing the farmers and other actors</li> </ul>

### Work tools

- Notebook, pens, sheet to fill in, table for recording and viewing information, camera

### Service costs

Transport costs	...
Communication costs	...
Photocopy	...
Service fee	...

## 5. Prospection of inland valleys with farmers

### Activities

1. Visit the pre-selected inland valleys on foot with the farmers concerned to complete, verify and confirm or refute the information obtained during the village meeting.
2. To take notes.
3. Take pictures if necessary.

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
A verified list of data obtained during inland valley prospecting	<ul style="list-style-type: none"> <li>• The sheet must be completely filled in.</li> <li>• The sheet must include the verification of the data obtained during the prospecting of the inland valley</li> <li>• The language used must be correct and understandable (grammar, spelling etc.)</li> </ul>
A file containing the photos taken during the prospecting	<ul style="list-style-type: none"> <li>• Several photos showing the operators and the inland valleys concerned</li> </ul>

### Work tools

- Camera, hoe and cutter, notepad and pens

### Service costs

Transport costs	...
Communication costs	...
Photocopy	...
Service fee	...



## 6. Second processing and pre-selection of inland valleys

### Activities

1. Prepare the summary of the information collected during the village meeting and prospecting in the field in order to designate the sites for the validation phase.
2. Summarize by filling in the processing sheet.
3. Choose inland valleys that are suitable for the selection phase.
4. Rank inland valleys by their suitability for intervention.

### Products to be delivered

<i>Product</i>	<i>Criteria for verification</i>
The processing sheet with ranking by suitability for intervention	<ul style="list-style-type: none"> <li>• The sheet must be completely filled in.</li> <li>• The file must include privileged data related to land, the importance of culture (crop) in the farmers' lives, and important factors such as land ownership, mode of access, average experience of farmers, destination of products, market access and processing.</li> <li>• The sheet must include an initial ranking by suitability for intervention on the basis of the information collected.</li> </ul>

### Work tools

- A sheet of A4 paper, a pen, a notepad, a processing sheet.

### Service costs

Photocopy	...
Service fee	...

## 7. Second village meeting for validation

### Activities

1. Organize a meeting with all farmers, landowners and opinion leaders in the village.
2. Inform the whole community several days in advance of the meeting.
3. Take care to record the main conclusions of this important meeting.

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
A list of the information collected during the meeting	<ul style="list-style-type: none"> <li>• The sheet must be completely filled in.</li> <li>• The file must include additional information about the land from the landowner and his approval, the willingness of farmers and the community as well as other necessary information.</li> <li>• The language used must be correct and understandable (grammar, spelling etc.).</li> </ul>
A folder of photos of the meeting	<ul style="list-style-type: none"> <li>• Several photos showing the farmers and other actors.</li> </ul>

### Work tools

- Notebook, pens, sheet to fill in, table for recording and viewing information, camera.

### Service costs

Transport costs	...
Communication costs	...
Photocopy	...
Service fee	...

## 8. Third processing and file constituting

### Activities

1. Make the final choice of inland valleys that are suitable for development.
2. Rank the inland valleys that have received the unreserved support of the entire community at the top of the list.
3. Compile a site file including phase 1, 2 and 3 reports and mainly the processing documents.

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
A list of inland valleys suitable for development	<ul style="list-style-type: none"> <li>• The sheet must be completely filled in.</li> <li>• The sheet must include, the name or indicator of the inland valleys, the agreement of the landowner, the farmers and the community or the villagers; the contribution of actors; important conclusions; selection and ranking.</li> <li>• The language used must be correct and understandable (grammar, spelling etc.).</li> </ul>
One file per site including phase 1, 2 and 3 reports	<ul style="list-style-type: none"> <li>• The files are complete.</li> </ul>

### Work tools

- A sheet of A4 paper, a pen, a notepad and a table to fill in.

### Service costs

Photocopy	...
Service fee	...

## 9. Final ranking of the selected inland valleys

### Activities

1. Take into account the data from the three phases to achieve the final ranking.
2. Rank according to suitability for intervention.
3. Determine through the different phases, the factors for final selection of a inland valley by order of economic importance:
  - a. Willingness of actors
  - b. land ownership and non-existence of land conflicts
  - c. the accessibility of the inland valley
  - d. the number and experience of the actors
  - e. the height, extent and duration of floods
  - f. soil texture and to a lesser extent other biophysical factors

### Products to be delivered

<i>Product</i>	<i>Criteria for verification</i>
A table with the final ranking of the inland valleys suitable for development	<ul style="list-style-type: none"> <li>● The sheet must be completely filled in.</li> <li>● The sheet must include the factors listed above</li> <li>● The language used must be correct and understandable (grammar, spelling etc.)</li> </ul>

### Work tools

- A sheet of A4 paper, a pen, a notepad

### Service costs

Photocopy	...
Service fee	...



## II. Development of the inland valleys

## 1. Site visit

### Activities

1. Gather the farmers in the cleared inland valley, after having informed them in advance.
2. Explore the inland valley from top to bottom with the farmers.
3. Obtain information from farmers on water movements, the nature of the soil and crops.
4. Systematically note and sketch graphical representation of all information collected from the field.
5. Create a map of the site based on the information received (estimate dimensions if possible to help reflect the proportions on the map).

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
List of all the information collected from the farmers	<ul style="list-style-type: none"> <li>● The sheet must be completely filled in.</li> <li>● The sheet must include dimensions, water movements (the inlet and outlet of water), the nature of the soil and the crops, points of singularity, indications of the direction of slopes.</li> <li>● The language used must be correct and understandable (grammar, spelling etc.)</li> </ul>
Graphical representation of all the information collected (inland valley map)	<ul style="list-style-type: none"> <li>● The sketches</li> </ul>
Folder of photos	<ul style="list-style-type: none"> <li>● Photos showing important aspects</li> </ul>

### Work tools

- A4 paper, a pen, a notepad, a camera

### Service costs

Transport costs	...
Communication costs	...
Service fee	...

## 2. Drawing up the inland valleys map

### Activities

1. Transfer observations and key points on the map as accurately as possible.
  - a. water inlets on the site
  - b. points of singularity
  - c. indication of the water course.
2. Estimate the dimensions if possible to help reflect the proportions on the map.
3. Use a north-south orientation.
4. Identify and place on the map remarkable points such as trees left, termite mounds, outcrops etc.
5. Plot of the water circulation plane, indicate the direction of slopes and their intensity.

### Products to be delivered

<i>Product</i>	<i>Criteria for verification</i>
Inland valley map	<ul style="list-style-type: none"> <li>• The map must have a north-south (N – S) orientation on the plan.</li> <li>• The technician identifies remarkable points (trees left, termite mounds, outcrops, etc.) and places them “precisely” on the map.</li> <li>• The technician plots the water circulation plane and indicates the direction and intensity of slopes.</li> </ul>

### Work tools

- A4 paper, pens, a notepad

### Service costs

Service fee

...

### 3. Design of the development plan layout (provisional)

#### Activities

1. Make the provisional development plan from the inland valley map, on a sheet of A4 paper.
2. Start with structures such as belt bunds and drainage canals and finish with the positioning of the plots.
3. Ask farmers to check the provisional plan.
4. Develop a precise and clear plan to facilitate the implementation.

#### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
The provisional development plan	<ul style="list-style-type: none"> <li>● Points of singularity are shown as a circle.</li> <li>● The limit of clearing is indicated by the belt bunds.</li> <li>● The main water line is marked as a main drainage canal (also indicated by the sign of the belt bunds).</li> <li>● The positioning of the plots meets the standard.</li> <li>● The plan includes:               <ol style="list-style-type: none"> <li>a. the inland valley shape delimited by belt bunds</li> <li>b. water inlets in the inland valleys</li> <li>c. natural drainage canals</li> <li>d. points of singularity</li> <li>e. secondary bunds</li> <li>f. transverse drainage canals</li> </ol> </li> </ul>

#### Work tools

- A4 paper, pens, a notepad

#### Service costs

Service fee

...



## 4. Revision and correction of the plan

### Activities

1. Invite farmers to a meeting.
2. Present and explain to the producers gathered in the inland valley, the provisional plan drawn up following the information collected.
3. Discuss the plan with the producers by walking through the inland valley again, then correct the plan by incorporating the modifications made by both parties.
4. Integrate all the corrections and remarks in order to arrive on a final plan drawn up in a participatory manner by all the actors. This plan constitutes the "development plan" which will be implemented on the land.
5. Return to the office to clean up and finalize the plan.

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
The final development plan	<ul style="list-style-type: none"> <li>● Corrections and modifications are incorporated.</li> <li>● The plan is put into its final form.</li> </ul>
Folder of photos	<ul style="list-style-type: none"> <li>● The photos show the meeting and its actors.</li> </ul>

### Work tools

- A sheet of A4 paper, a pen, a notepad, a camera

### Service costs

Transport costs	...
Communication costs	...
Service fee	...

## 5. Preparing for staking

### Activities

1. Inform farmers of the meeting.
2. Give precise instructions to farmers to:
  - a. clear the land if necessary
  - b. collect the stakes
  - c. paint the stakes according to need and according to the development plan

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
Photos of clearing stages, painting and details of painted stakes	<ul style="list-style-type: none"> <li>● The selected inland valley is cleared.</li> <li>● The stakes (around 400 stakes per ha, although this varies depending on the land shape) and the paint cans available are collected.</li> <li>● The stakes are painted according to the needs and colors</li> </ul>

### Work tools

- Cutters, paint cans (red, dark blue, sky blue, green, yellow and black), brush and thinner, stakes, camera

### Service costs

Transport costs	...
Communication costs	...
Service fee	...

## 6. Marking of the different water control structures: staking

### Activities

1. Indicate to the producers the location of the various structures which are gradually materialized using the stakes. During the materialization the stakes must be straight.
2. Guide the materialization and realize these steps in the following order:
  - a. belt bunds
  - b. supply water control structures
  - c. main or natural drainage canals (in the direction of the slope)
  - d. points of singularity
  - e. transverse drainage canals (perpendicular to the slope)
  - f. secondary bunds

### Products to be delivered

<i>Products</i>	<i>Criteria for verification</i>
Photos of the stages of the staking work and details of the materialized structures	<ul style="list-style-type: none"> <li>• The regulations concerning the location and dimensions of the structures are respected.</li> <li>• The dimensions of plots.</li> </ul>

### Work tools

- Map, rope, decameter, camera

### Service costs

Transport costs	...
Communication costs	...
Service fee	...

## 7. Building of the different water control structures

### Activities

1. Inform the farmers of the meeting in the inland valleys.
2. Guide the construction and realize these steps in the following order:
  - a. make the belt bund
  - b. make the protection bunds for the natural drainage canals
  - c. carry out the supply structures
  - d. once the natural elements have been finished, we proceed to the realization of:
    - i. secondary bunds for artificial drainage axes
    - ii. and plot bunds to separate the plots
  - e. rake and level the soil at the level of the plots

### Products to be delivered

Products	Criteria of verification
Photos of the stages of work and details of the materialized structures	<ul style="list-style-type: none"> <li>● The bunds are mounted.</li> <li>● The canals (drainage canals) are dug.</li> <li>● The interior of the plots is leveled.</li> <li>● The bunds and canals are handmade with the daba</li> <li>● Leveling is also done by hand with the daba or a small board.</li> <li>● The correct dimensions (width, length and height) are respected.</li> </ul>

### Work tools

- Daba, cutter, map, decameter, camera

### Service costs

Transport costs	...
Communication costs	...
Service fee	...