



## Booklet

# Collection, entry and verification of data II

## *The application of data collection and management*

### *Summary*

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## About 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 30 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

Development of the toolkit was supported by AfricaRice project: "Fostering the Impact of Rice Technologies for Better Livelihoods in Sub Saharan Africa (FIRITEL)" funded by the Belgian Development Cooperation.

## Photos credits

- [1] Photo of Medsile on [www.lwariacom](http://www.lwariacom)
- [2] Figure 1-32 developed by the pedagogical team

## Context of the booklet

This is the first part of the booklet that deals with data collection for a Smart-Valleys development project. Data is collected during the different stages of the inland valley development. It is used for project management, providing information on the progress of the project and making it possible to prepare project reports. At the same time, this data is also used as proof that tasks have been successfully completed by the service providers. The introduction to the concept of services can be found in booklet 5. A description of services can be found in guide 7.

# ODK collect application

ODK is a data collection and management application. There are other such applications, but ODK is open source, free, and can be used freely. Field data is entered by the data collector directly on a mobile device, smartphone or tablet.

There are two steps in the installation. First of all, the data sheets are created in an Excel table and after the server has to be configured by setting up the database. The second installation step is where ODK is installed and configured on mobile devices.



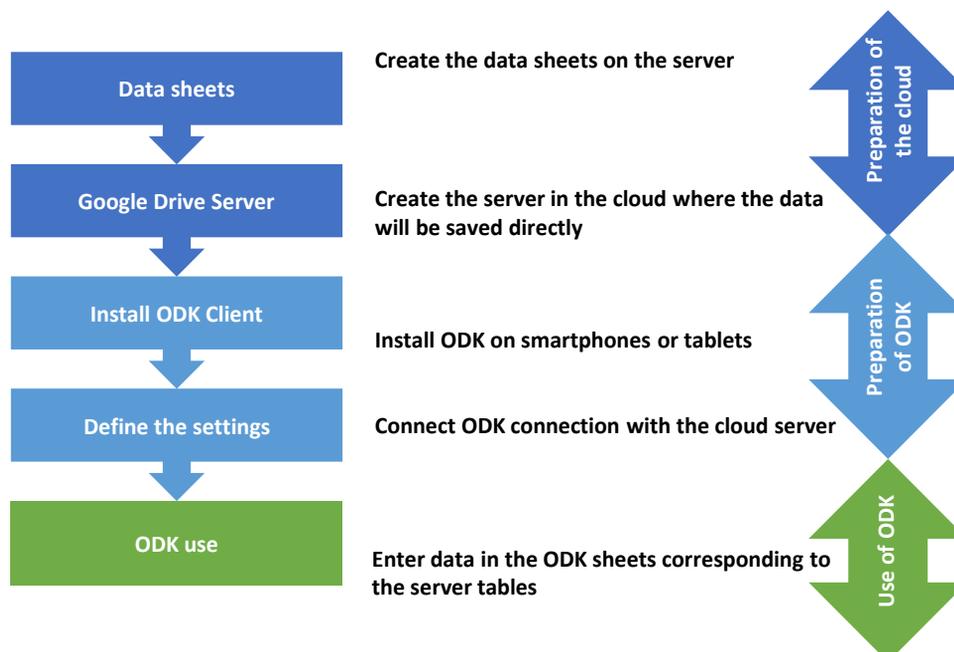
Data collection with a mobile device [1]

Once these two installation steps are complete, the application can be used by the data collector in the field. After entering the data directly into the ODK forms (which can be done without an internet connection), the data must be sent to the server by synchronizing the form with the database.

The data collector is not involved in the installation steps. These steps are only briefly discussed in this booklet. The use of the application by the data collector is covered in more detail.

## From configuration to use

Now follow the steps visualized here:

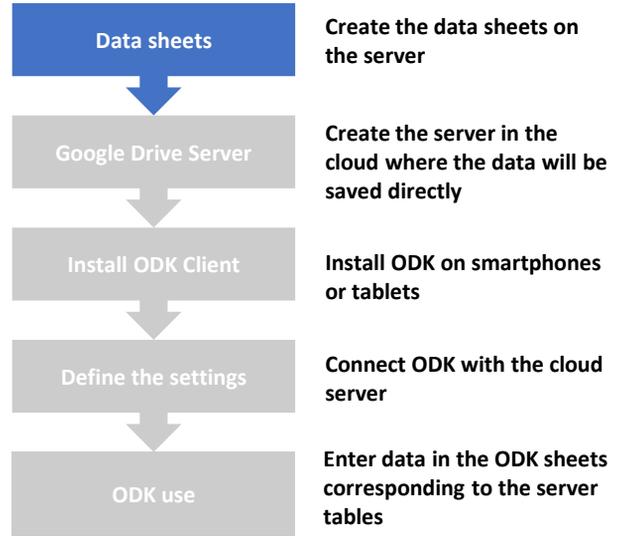


## Create a data sheet

The Excel table of the "data sheet" must have three pages with these names:

- "Survey"
- "Choices"
- "Settings"

The "survey" page defines the types of question ("type"), the description of the question ("name"), the name of the question as displayed in ODK ("label") and other optional characteristics.



Create the data sheets on the server

Create the server in the cloud where the data will be saved directly

Install ODK on smartphones or tablets

Connect ODK with the cloud server

Enter data in the ODK sheets corresponding to the server tables

	A	B	C	D	E	F	G	H	I	J
1	type	name	label	hint	relevant	constraint	constraint_message	repeat_count	calculation	require
2	start	start_time								
3	end	end_time								
4	deviceid	device_id								
5	subscriberid	subscriber_id								

Navigation tabs: survey (highlighted), choices, settings

Figure 1

The pre-established response lists from which the user will choose an option are defined under "choices". These lists make the questions easier to use and reduce the risk of errors.

	A	B	C	D	E	F	G	H	I	J	K
1	list name	name	label								
2											
3	yes_no	yes	Yes								
4	yes_no	no	No								
5											
6	sex	male	Male								

Navigation tabs: survey, choices (highlighted), settings

Figure 2

Under "settings" you define the name and location (URL) of the file where the data will be saved when the data collectors synchronize their ODK app with your database.

	A	B	C	D	E	F	G	H	I	J	K
1	form_title	form_id	submission_url								
2	results	results	<a href="https://docs.google.com/spreadsheets/d/1HtK9RUpfOCVzluNjhFuaEAyADC80LuHpQUsliliiR3-8/edit?usp=sharing">https://docs.google.com/spreadsheets/d/1HtK9RUpfOCVzluNjhFuaEAyADC80LuHpQUsliliiR3-8/edit?usp=sharing</a>								
3											
4											
5											
6											
7											

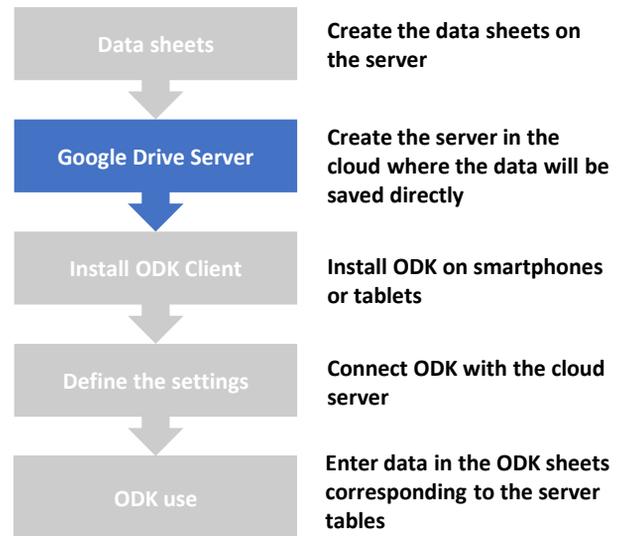
Navigation tabs: survey, choices, settings (highlighted)

Figure 3

## Using Google Drive as a server

This step consists of creating a single database where the data collected in the field by the entire team of technicians will be gathered. It therefore only needs to be done once for each project and must be done by or for the project manager.

Google Drive is a cloud backup, document sharing and collaboration service. This means that documents are saved on off-site servers, on the Internet, and can be accessed by multiple authorized persons, wherever they are, as long as they have an Internet connection.



### Google Drive configuration

1. Copy the sheet to the Google Drive folder where you want the data to be saved later.

2. Copy the web link (click on "Share") of the sheet from Google Drive (figure 4) and paste it into the data sheet itself, in the "settings" section that you have just created, directly under "submission\_url" (figure 5) - all the data saved by the data collectors will be grouped together in this data sheet, which becomes your database.

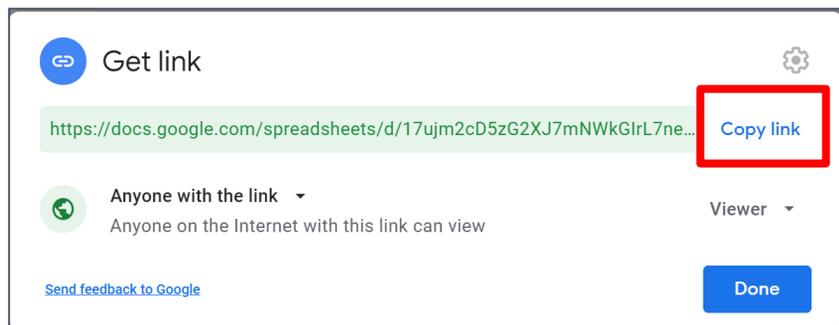


Figure 4

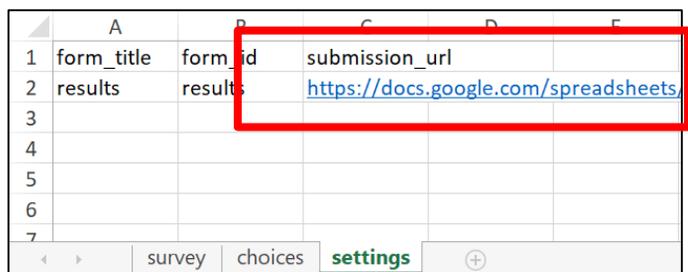


Figure 5

3. Convert the data sheet to an ODK compatible format (on the ODK website - <https://getodk.org/xlsform/>) which is the form that the data collector can then fill out on the mobile device.

4. Save the form (ODK format) in the same folder as the Excel / Google Sheets data sheet (figure 6).

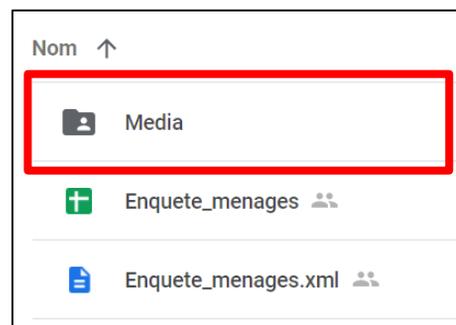


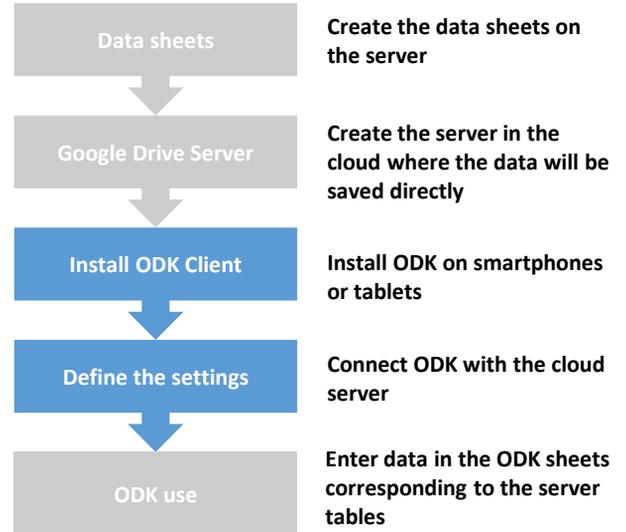
Figure 6

## Installing the ODK Collect application

This part of the preparation work must be done by or for each technician who will collect data in the field. It involves installing the data entry application and connecting it to the database on the server.

### 1. Procedure for installation

- Take your Android phone or tablet and go to the Google Play Store app
- Search for “ODK Collect” and install this application by clicking on “Install” as shown in figure 7
- Installation of this application requires 11.7 MB of memory space



## Application settings

### 2. Access to the application settings

- Open the ODK Collect application after installation and accept the terms of use that appear
- The application home page will then be displayed (figure 8)
- You must access the menu and configure the application before you can use it
- To do this, click on the three small dots framed in red on figure 8
- In the menu, choose the option "General settings" as shown in figure 9

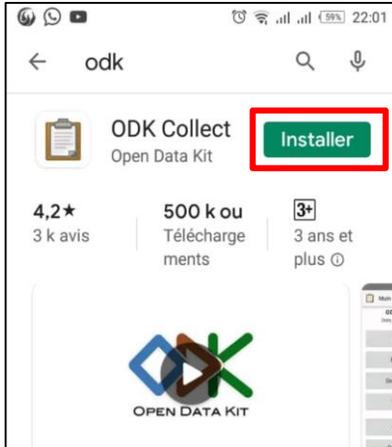


Figure 7

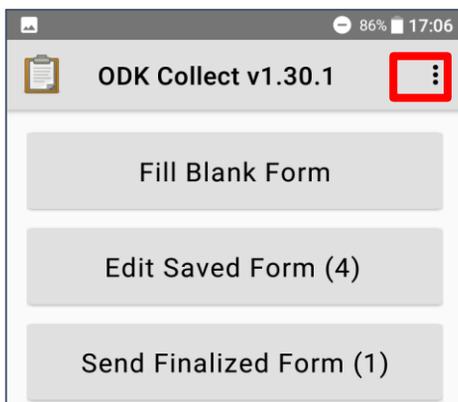


Figure 8

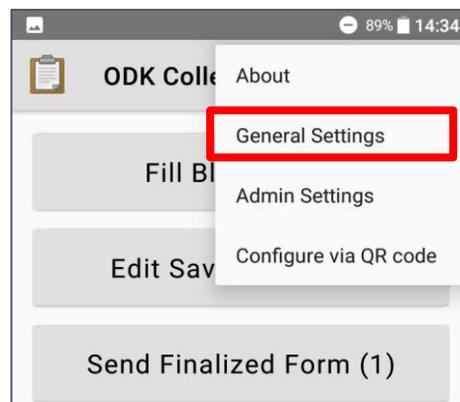


Figure 9

### 3. Location of the Google Drive server where the database was created in a spreadsheet

- On the list of parameters that appears, choose the option "Server" shown in figure 10
- Make sure that the type of account is "Google Drive, Google Sheets" (figure 11/12)
- Then, you must select the Gmail account corresponding to Google Drive where the Google Sheet spreadsheet which contains the database structure has been saved (see page 4 of this booklet)
  - this information will be provided to you by your supervisor or the project manager), and on which the data aggregation will be performed (figure 13)

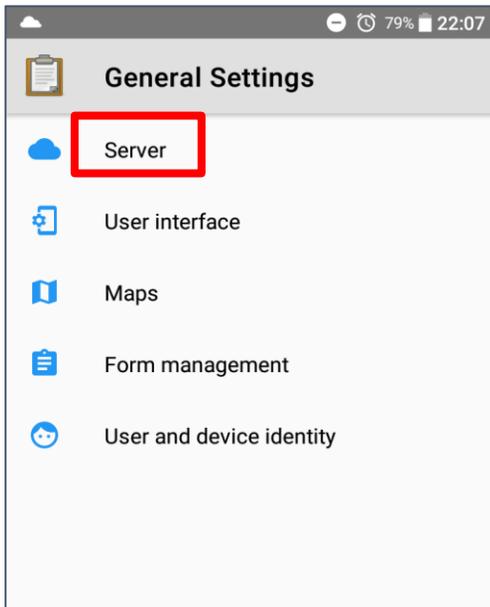


Figure 10

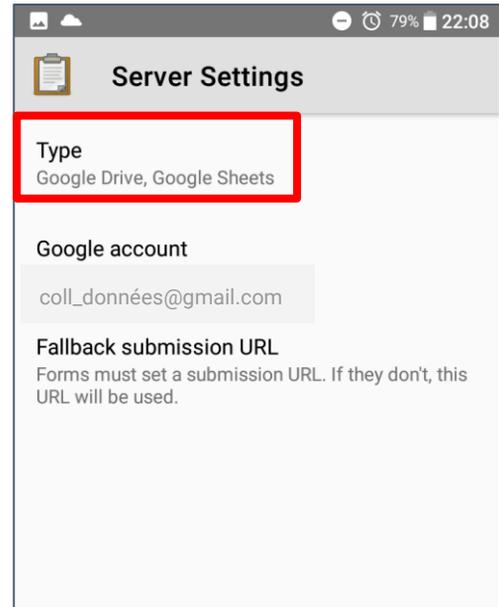


Figure 11

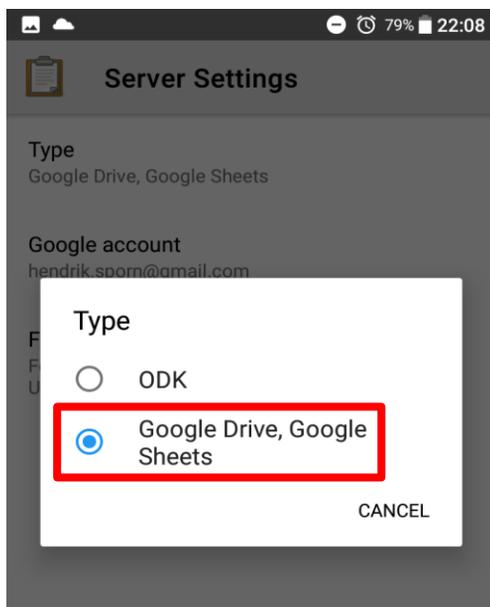


Figure 12

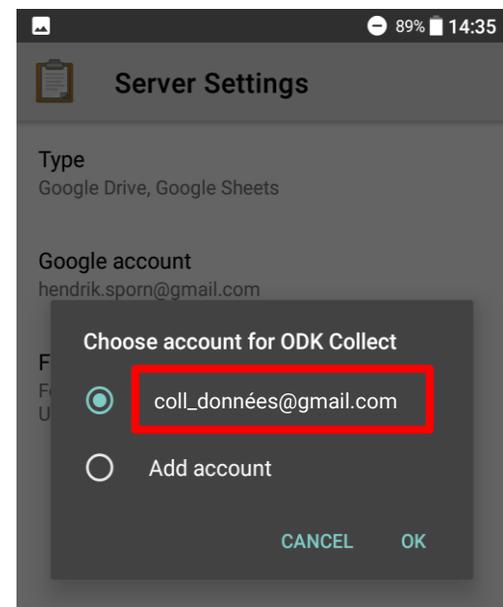


Figure 13

#### 4. Personal preference settings: "User interface"

- Here you can choose (figure 14):
  - screen color (theme)
  - language
  - font size
  - the means of navigation.

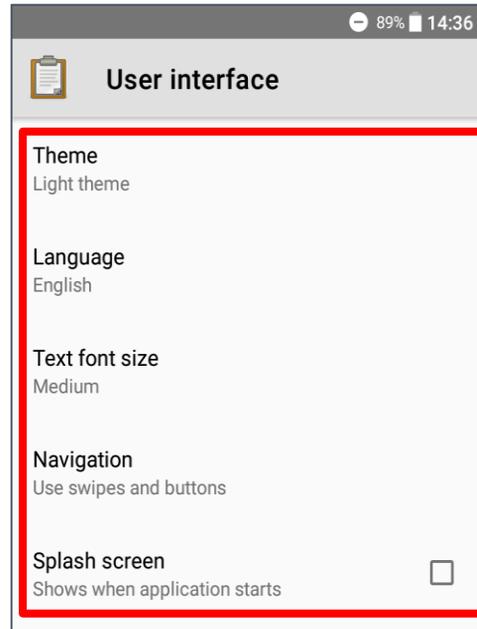


Figure 14

#### 5. "Form management" parameters

- In this category, you choose the procedures for transferring data from the form between the server and the mobile device.
- The following screenshots (figure 15/16) show you which options to choose.
- These parameters are recommended to keep the data sheet updated, to make the management of the completed data sheets as simple as possible and to avoid unnecessarily increasing the volume of transferred data.

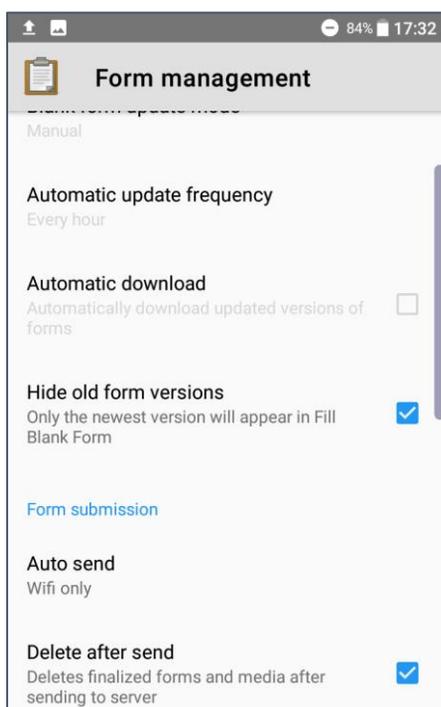


Figure 15

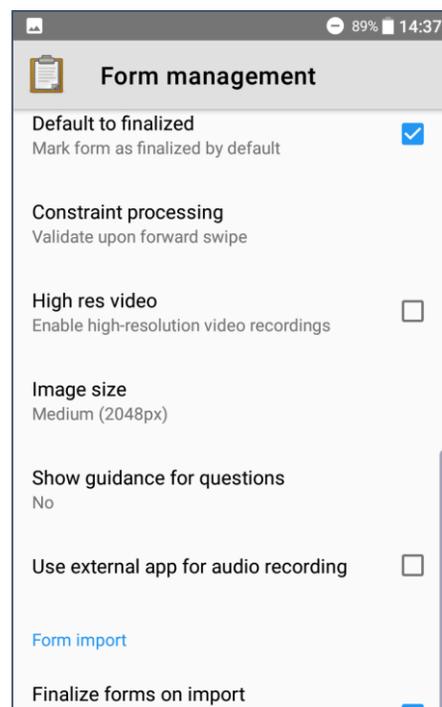


Figure 16

## 6. "User and device identity" settings

- These personal data will facilitate the attribution of the data that you send to the server. It is essential for the management and analysis of data and also for the payment of services.
- Choose the parameter category "User and device identity" (figure 17)
- Give ODK the requested authorization (figure 18), then enter your personal data (figure 19)

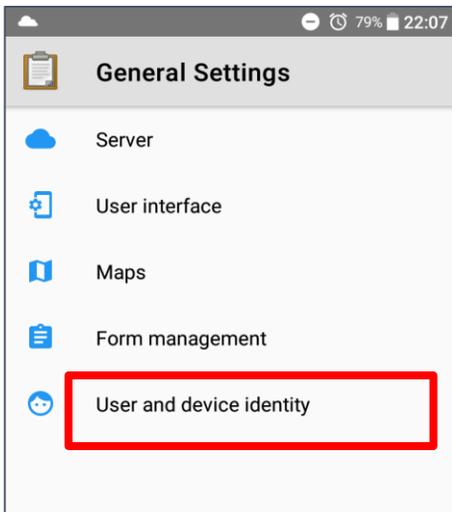


Figure 17

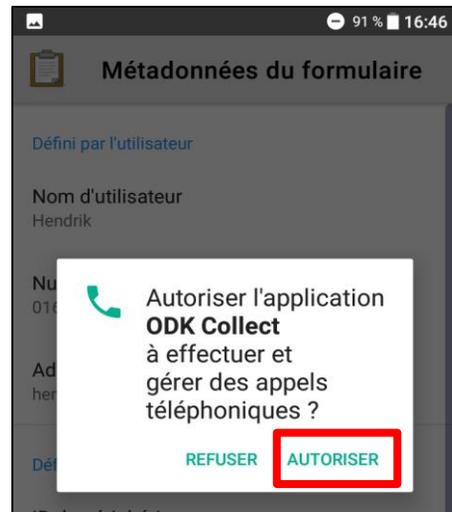


Figure 18

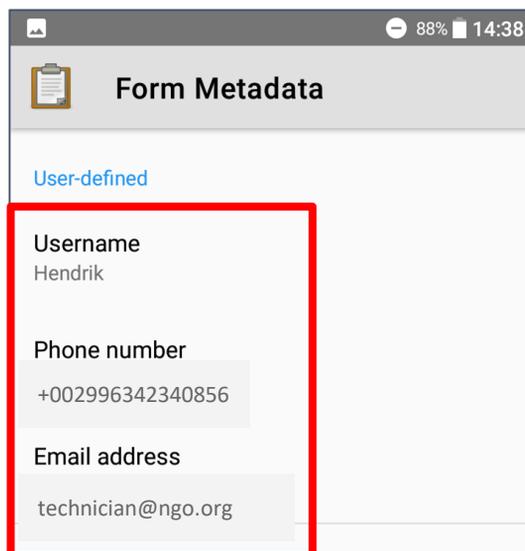
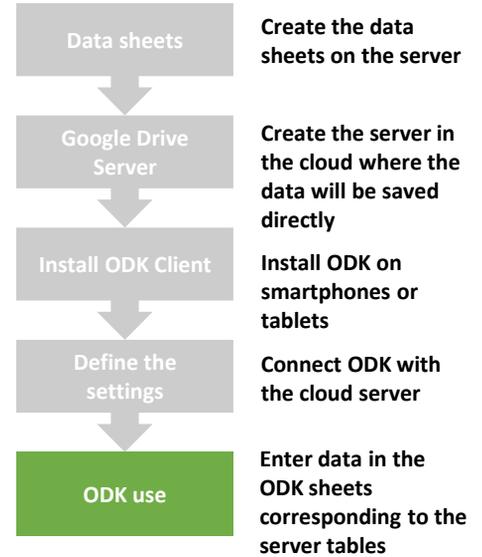


Figure 19

## Using the application



### 1. Download forms

- Once the parameters are defined, ODK Connect can be used
- There are 3 basic steps:
  - a. before going into the field to collect data, download the form while you have an internet connection.
  - b. fill out the form as you collect data in the field. (this can be done offline)
  - c. send the form data to the server (after coming back from the field, when you have an internet connection).
- Download the form
  - a. return to the main menu and click on "Get blank form" (figure 20)
  - b. Look up the form to fill out in the Google Drive folder - your supervisor or project manager will give you the exact name of the form to use
  - c. choose the form and click on "Download selected". (figure 21)

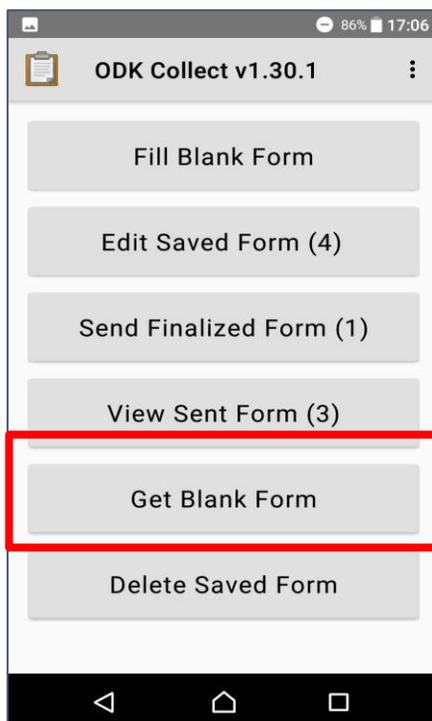


Figure 20

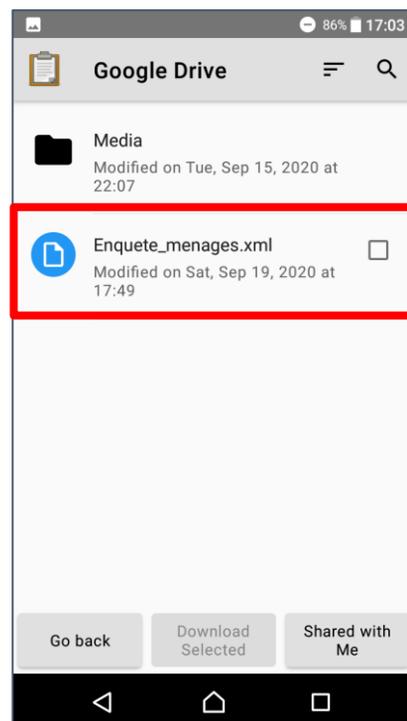


Figure 21

## 2. Complete the form

- After downloading of one or more forms, you can consult them in the section "Fill Blank Form" of the main menu (figure 22)
- From this moment, the data collection in the field which is done by filling out a form is possible even without an internet connection (in airplane mode or off-grid)
- To enter the data, go to the section "Fill Blank Form" (figure 22) and click on the desired form to display it (figure 23)

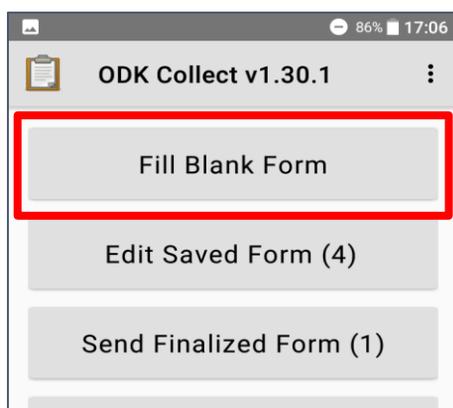


Figure 22

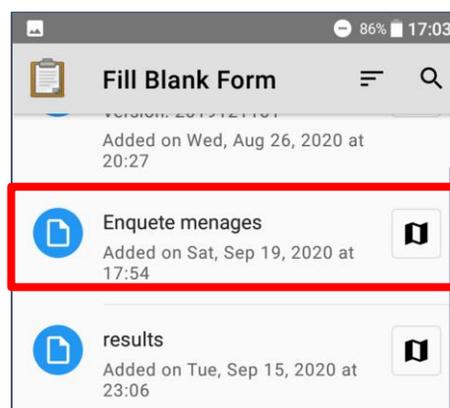


Figure 23

- You can now enter the data step by step
- Note that questions to which an answer is required are preceded by a red asterisk (\*)
- Navigate between the questions with the navigation buttons (A / B)

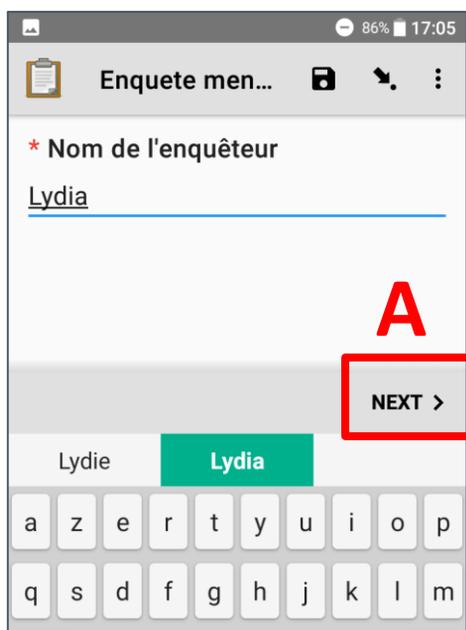


Figure 24

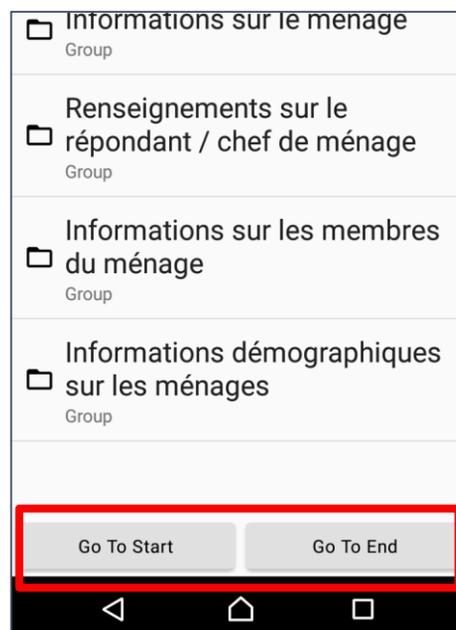


Figure 25

- There are two other main buttons on the window (figure 26).
- The “floppy” icon (figure 26 A) allows you to save the data at any time, in your copy of the form.
- The second button (figure 26 B) displays the question categories, and gives you the possibility to switch between these different question categories (figure 27 A)
  - a. this makes it easier to find and correct a question that has already been answered
  - b. you can also easily jump to the beginning or the end of the form (figure 27 B)

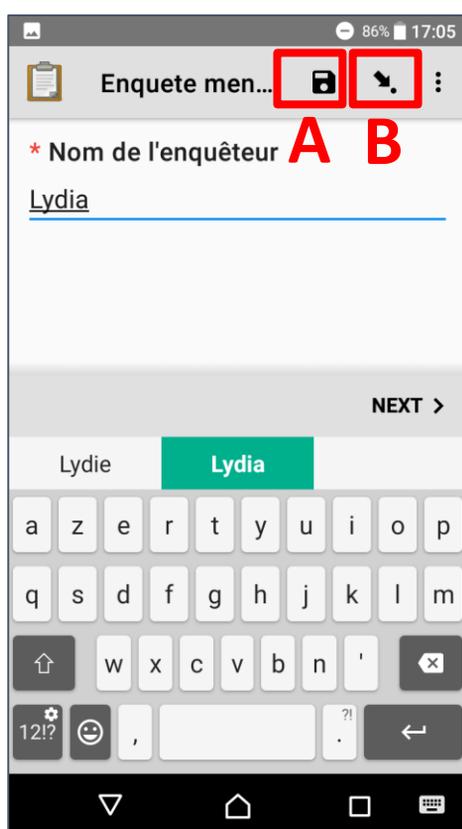


Figure 26

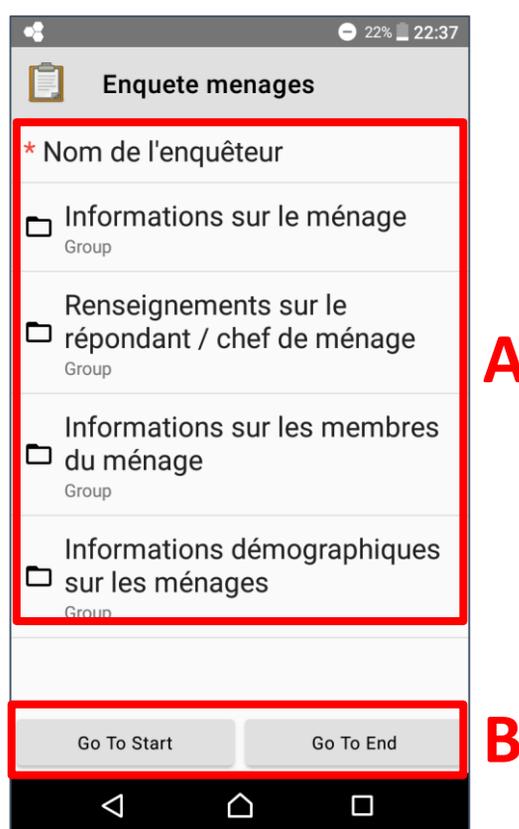


Figure 27

### 3. Save the form after finishing data collection

- After entering all the data, you can name the form (figure 28).
- This is useful if the same survey is carried out several times (for example with several farmers, or in several villages). You can use the name of a person, the date or the place where the data was collected.
- You can now send the form to the server (figure 29/31) when you have an internet connection, or keep the form to modify it again later (figure 29/30).

A "green cloud" (figure 32 A) indicates that a form has been sent successfully, a "red cloud" (figure 30 B) indicates that a form has not be sent successfully to the server.

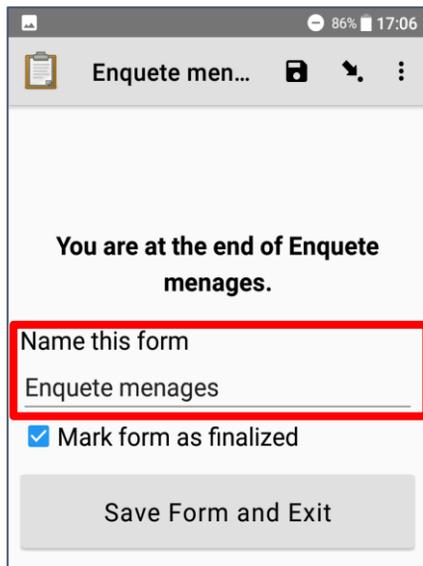


Figure 28

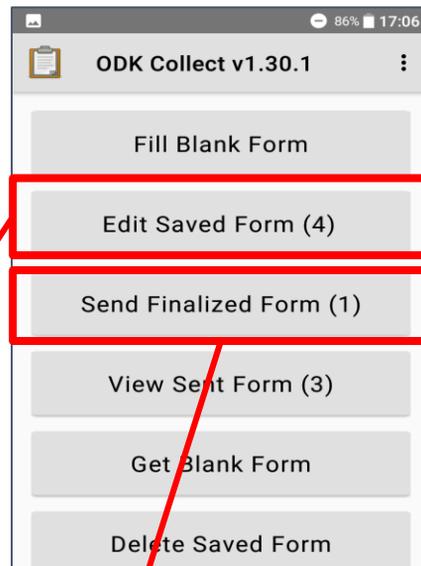


Figure 29

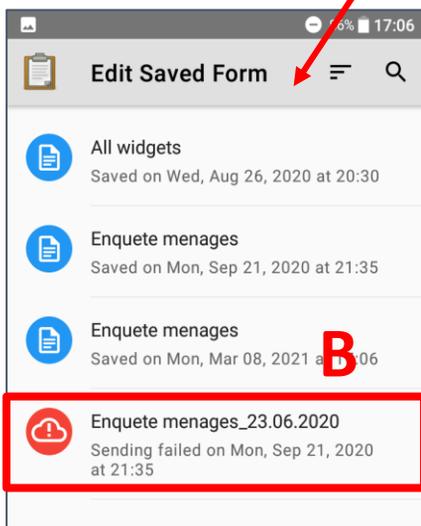


Figure 30

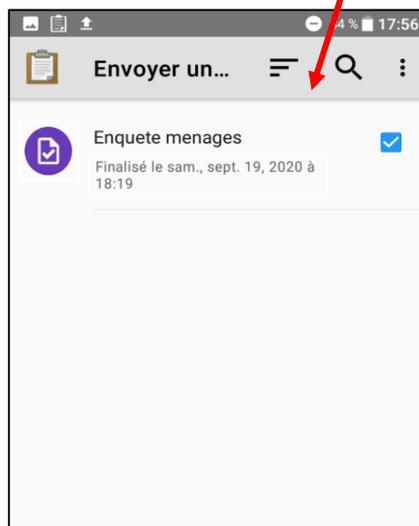


Figure 31

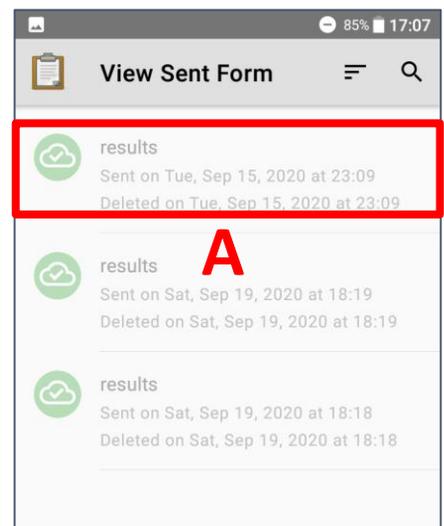


Figure 32