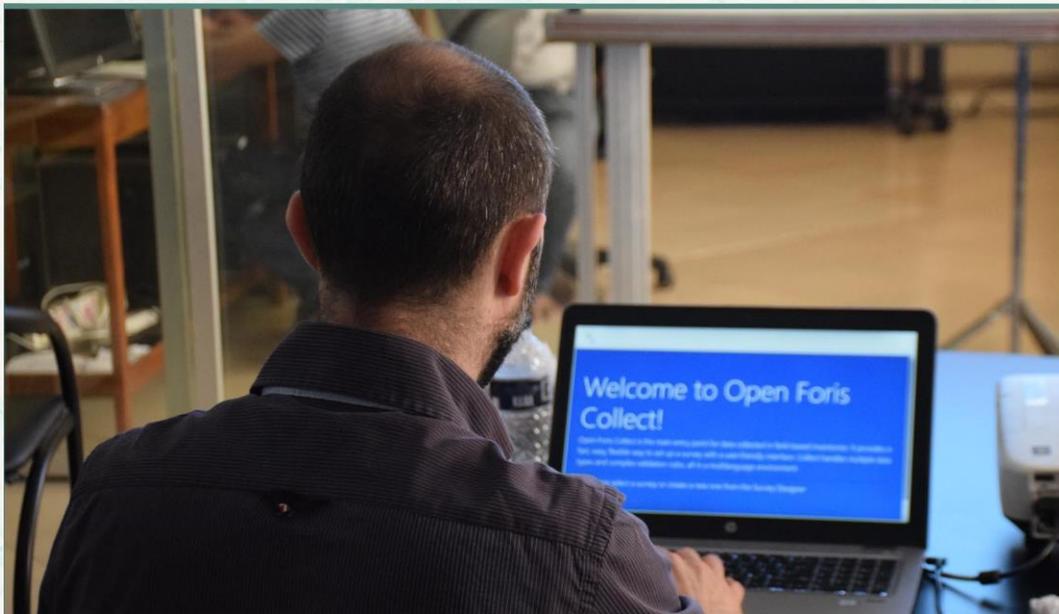




# Proceedings of training on Open Foris Collect- procedures and work flow for improved data collection, data quality checks and data management



**Bangladesh Forest Department**  
**01-04 April 2018**



The Forest Department of Bangladesh leads actions to improve forest management and conservation, adopting forward thinking, innovative approaches in its management of approximately 1.55 million hectares of land across the country.

In 2015, the Forest Department began a process to establish a National Forest Inventory and Satellite Land Monitoring System for improved forest and natural resource management. The process supports national objectives related to climate change mitigation and provides information in support of the UN-REDD programme aimed at Reducing Emissions from Deforestation and Forest Degradation (REDD+). The process also addresses domestic information needs and supports national policy processes related to forests and the multitude of interconnected human and environmental systems that forests support.

The activities implemented under the Bangladesh Forest Inventory process are collaboration between several national and international institutions and stakeholders. National partners from multiple government departments and agencies assist in providing a nationally coordinated approach to land management. International partners, including the United States Agency for International Development (USAID) and the Food and Agriculture Organization of the United Nations (FAO) are supporting the development of technical and financial resources that will assist in institutionalizing the process.

The results will allow the Forest Department to provide regular, updated information about the status of trees and forests for a multitude of purposes including for assessment of role of trees for firewood, medicines, timber, and climate change mitigation.

#### **CONTACTS:**

##### **Md. Zaheer Iqbal**

National Project Coordinator  
Bangladesh Forest Department  
Email: [z.iqbal60@gmail.com](mailto:z.iqbal60@gmail.com)

##### **Matieu Henry**

Chief Technical Advisor  
Food & Agriculture Organization of The United Nations  
Email: [matieu.henry@fao.org](mailto:matieu.henry@fao.org)

Suggested Citation: **Kumar, M. F., Mahamud, R., Johnson, K.** 2018. Proceedings of “Training on Open Foris collect- procedures and work flow for improved data collection, data quality checks and data management”. 01-04 April 2018. Dhaka, Bangladesh Forest Department, Food and Agriculture Organization of the United Nations.

#### **Disclaimer**

This report is designed to reflect the activities and progress related to the project GCP/GD/058/USAID “Strengthening National Forest Inventory and Satellite Forest Monitoring System in support of REDD+ in Bangladesh”. This report is not authoritative information sources – it does not reflect the official position of the supporting international agencies including USAID or FAO and should not be used for official purposes. Should readers find any errors in the document or would like to provide comments for improving its quality they are encouraged to contact one of above contacts.

## **EXECUTIVE SUMMARY**

A strong forest monitoring system relies largely on baseline information gathered by robust inventory data collection with proper data management and analysis procedures. Bangladesh Forest Inventory (BFI), uses an advanced application for data collection called “Open Foris Collect”, developed by FAO.

Previously, two trainings related to Open Foris Collect were implemented before BFI field work was started and BFI field data collection is about to be completed. Thus, there is an opportunity to review and learn from experiences in field data collection, quality checks and management. These will be useful skills for the Forest Department when the next inventory will be designed and implemented.

The training reported here focused on advanced level use of Open Foris and was designed specifically for the Forest Department. It was a four days training that took place in the RIMS unit of the Forest Department; beginning on 1<sup>st</sup> April 2018 and ending on 4<sup>th</sup> April 2018 with 16 participants. Mr. Ricci Stefano, a leading developer of “Open Foris”, provided advanced level training on data submission, data processing, data management and data analysis using Open Foris Collect (OFC) and OFC Mobile. The existing BFI field survey form, data collection and data management procedures are also discussed and evaluated to increase efficiency. Total 17 participants (13 male and 4 female) attended the training.

# CONTENTS

Executive Summary.....	3
Contents .....	4
1. Introduction.....	5
2. Objectives.....	5
3. Summary of the training .....	6
4. Recommendations for next steps .....	11
Appendix 1. list of figures .....	12
Appendix 2. Agenda .....	13
Appendix 3. Participant list .....	14
Appendix 4. Evaluation .....	15

# 1. INTRODUCTION

A strong forest monitoring system plays very crucial role in ensuring the sustainability of tree and forest resources. Development of a suitable baseline information is very much crucial to establish a strong forest monitoring system. The baseline largely depends on robust forest inventory and data collection from the field with proper data management and analyzing tools.

Bangladesh Forest Department under the leadership of Ministry of Environment and Forest is implementing first national forest inventory named “Bangladesh Forest Inventory (BFI)”. BFI will accumulate up-to-date forest data by using the latest technology for data collection and management. The technical support is being provided by FAO and Silvacarbon and is funded by USAID.

Bangladesh Forest Inventory (BFI) is using software based data collection, data recording and online data submission process. To increase efficiency and accuracy in data collection and to avoid cumbersome data entry, the “Open Foris Collect” application is being used, which is developed by FAO.

Prior to the starting of BFI field work, two Open Foris trainings were arranged to support survey form design and train users to collect data using this application. Another objective was to develop national capacities in data processing specifically related to the identification of common errors or inconsistencies in forest inventory data and review essential concepts in database management.

BFI field data collection is about to be completed and lessons are learned from the field data collection process, including quality checks and management which are mostly associated with Open Foris Collect. Issues are identified and to some extent solved with the support of the developer team from FAO. This knowledge transfer will be very useful for the Forest Department because they can use it to improve the future inventory. This refresher training was helpful for the Forest Department and focused on advanced use of Open Foris such as survey form development, basic data analysis options, and exporting data to different platforms, including Open Foris Calc. The existing BFI field survey form, data collection and data management procedures were also discussed and evaluated to increase efficiency for future use.

# 2. OBJECTIVES

- Instruct on how to develop Open Foris survey forms using a variety of data input options and checks.
- Evaluate the existing forest inventory and socioeconomic forms and provide feedback for improvements
- Evaluate the BFI data management process and find out the pros and cons of the process; provided feedback about how to make the current system operationally more efficient.
- Suggest approaches for quality control using Open Foris
- Suggest procedures for long-term data archiving; for example, how to archive data now to be compatible with future versions 10 years from now.
- Give examples of how Open Foris Collect is integrated with data analysis platforms, including Open Foris Calc; give an overview of Open Foris Calc
- Demonstrate the use of Saiku

### 3. SUMMARY OF THE TRAINING

The Open Foris Collect training was 4-day long and started from 1<sup>st</sup> April to 4<sup>th</sup> April 2018 at Resource Information Management System (RIMS) unit of Bangladesh Forest Department. The days were divided into sessions. Day wise short description of training is provided below-

#### 1<sup>st</sup> April 12, 2018

Training started at 10:00 am with a short inaugural session. National project coordinator Mr. Zaheer Iqbal, Mr. Kristofer Johnson (International consultant, FAO) were present there. After the open ceremony the actual training started.

First a short session of “**General introduction to Open Foris**” took place by the trainer Mr. Ricci Stefano.

- ✓ The **download** and **installation** process of Open Foris was described.
- ✓ If web browsers are used other than “**Google Chrome**” then additionally **Adobe flash player** need to be installed.

After installation process a general introduction to “**Survey Design**” was presented. In the session the process of designing a survey was described in detail.

- ✓ A survey can be designed and used without using **Sampling Point data**
- ✓ The way of creating **New survey** from field form
- ✓ **Paper form** can be **attached** with the survey form
- ✓ **Creating or adding a code list** for the survey
- ✓ How to add **Spatial reference system** in the survey form

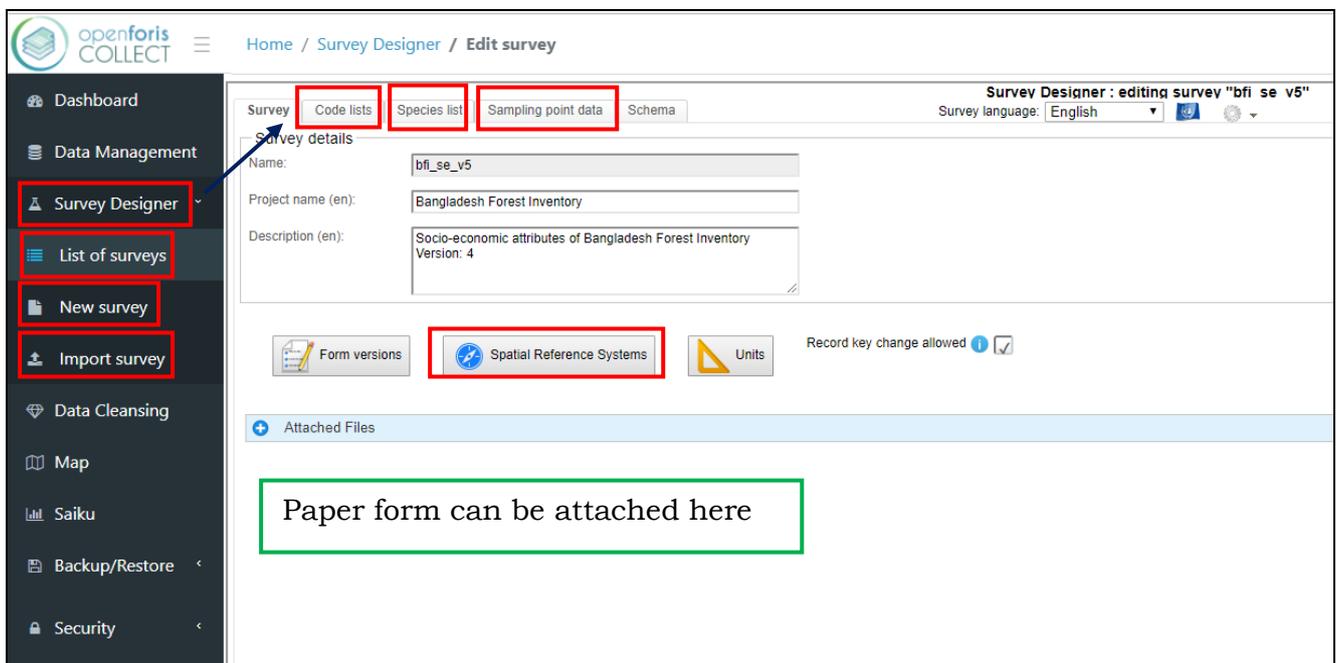


FIGURE 1: OPEN FORIS INTERFACE WITH DIFFERENT FUNCTIONS

For practice a survey named “test\_Bangladesh\_nfi” was created by the participants. Later modifying, adding and improving other information into the survey to increase the excellence were discussed like-

- ✓ Create a **Sampling point data** for the survey
  - How to **create** it?
  - How to **import**?

- What does the different **levels** of the sampling point data **indicate**?
- ✓ How to change **Cluster numbers** into code lists?
- ✓ How to write **Calculated value expression**?
- ✓ The way of writing **Expected location attributes**.
- ✓ To ensure the distance accuracy how to add a **Distance check** in Open Foris?
- ✓ The process of **extracting text information** and use calculated value expression from sampling point data.

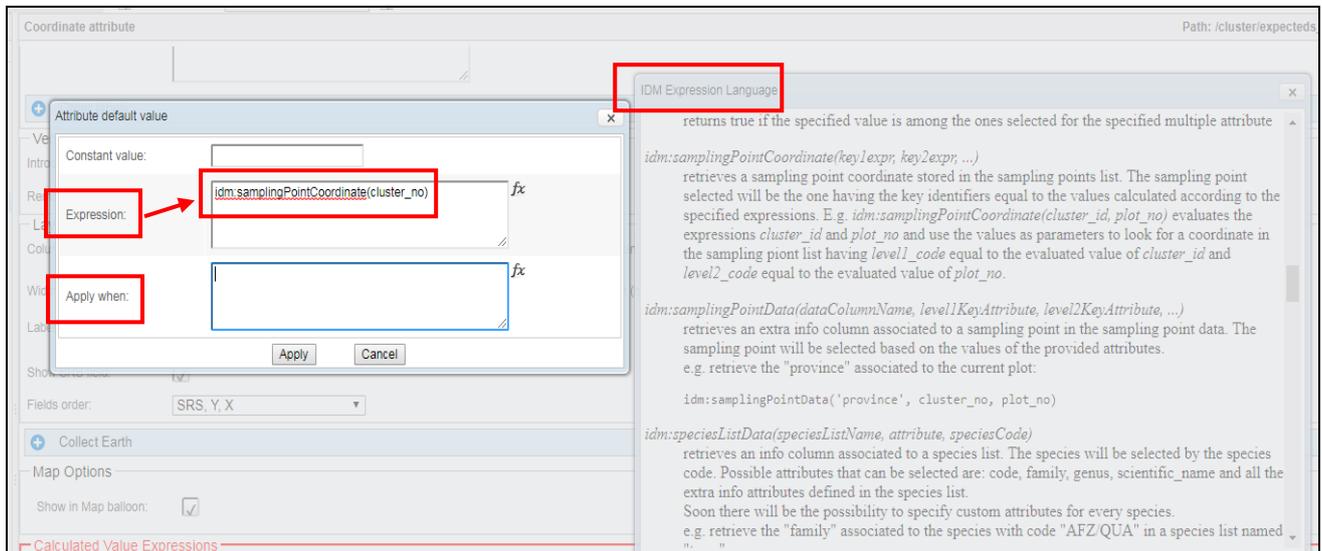


FIGURE 2: EXAMPLE OF A CALCULATED VALUE EXPRESSION

2<sup>nd</sup> April 12, 2018

Training started at 09:30 am and adding different complex attributes in form design was continued from the fast day.

- ✓ Using different **attributes** in Open Foris Collect
  - **Single** attributes (attributes grouping)
  - **Multiple** attributes
- ✓ Use of different types of multiple attributes **layout**
  - **Form** Layout
  - **Table** Layout
- ✓ **Inserting date** and how to **use current date** using default value option
- ✓ Setting up **Validation Checks** for time, Eg- time from start to end can't be more than 2 hours
- ✓ How to add **remarks** field in a survey design and implication of it?
- ✓ Using **parent code** in survey design, Eg- Plot> Sub-plot
- ✓ **Comparison Validation checks**: used to compare between two values, Eg- working day in a month should be within 1 to 30.
- ✓ Creating a **species list** in the survey
- ✓ How to add **multiple validation checks** together

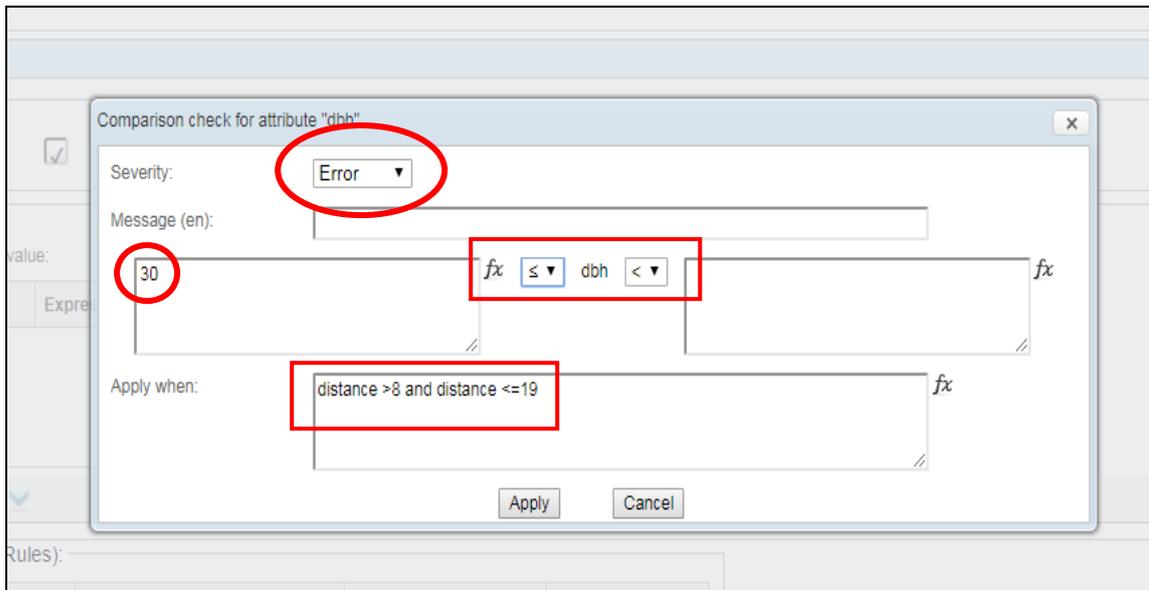


FIGURE 3: A COMPARISON VALIDATION CHECK

After lunch in the second session Open Foris Collect mobile is discussed. The data collection and data submission with the necessary components of collect mobile were highlighted in the discussion.

- ✓ **Publishing a survey:** For data collection in mobile device the survey must be published and export in collect mobile format.
- ✓ Introduction to Open Foris collect Mobile
  - Collect **interface**
  - **Benefits** of using collect: No manual data entry, validation checks, error checks
  - **Importing** survey into collect: importing a new survey into collect mobile
  - **Navigation:** Moving one attribute to next
- ✓ Overview of BFI Bio-physical survey
  - Practice data entry was done in BFI form
  - Some **issues** are identified in the existing Bio-physical survey
  - Some **improvements** can be done to increase efficiency of the survey
  - **RP attributes start time collection** setup is not appropriate. It is set as default value, but in that case the number of time the form will re-open every time it will take new time.

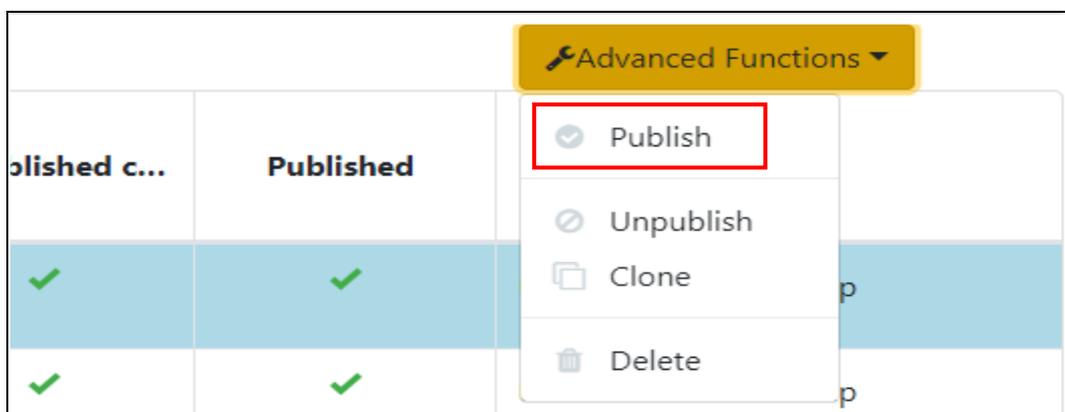


FIGURE 4: PUBLISHING SURVEY FOR DATA COLLECTION

3<sup>rd</sup> April 12, 2018

Based on the first two days learning and practice the participants were given some practice test. The trainer assessed the level based on what they had learnt about survey design and collect mobile data entry.

- ✓ Open Foris Collect **Expression Language**: Open Foris uses some expression language to write and calculation, set up any condition or validation and so on.
- ✓ **Data Cleansing** in Open Foris collect
  - **Manual data cleansing**: Manual checking of attributes to attributes
  - **Designing query for data cleansing**: query can be designed used for data cleansing
  - **Create problems report**: based on data cleansing query error reports can be generated
  - **Steps involved in Open Foris data cleansing**

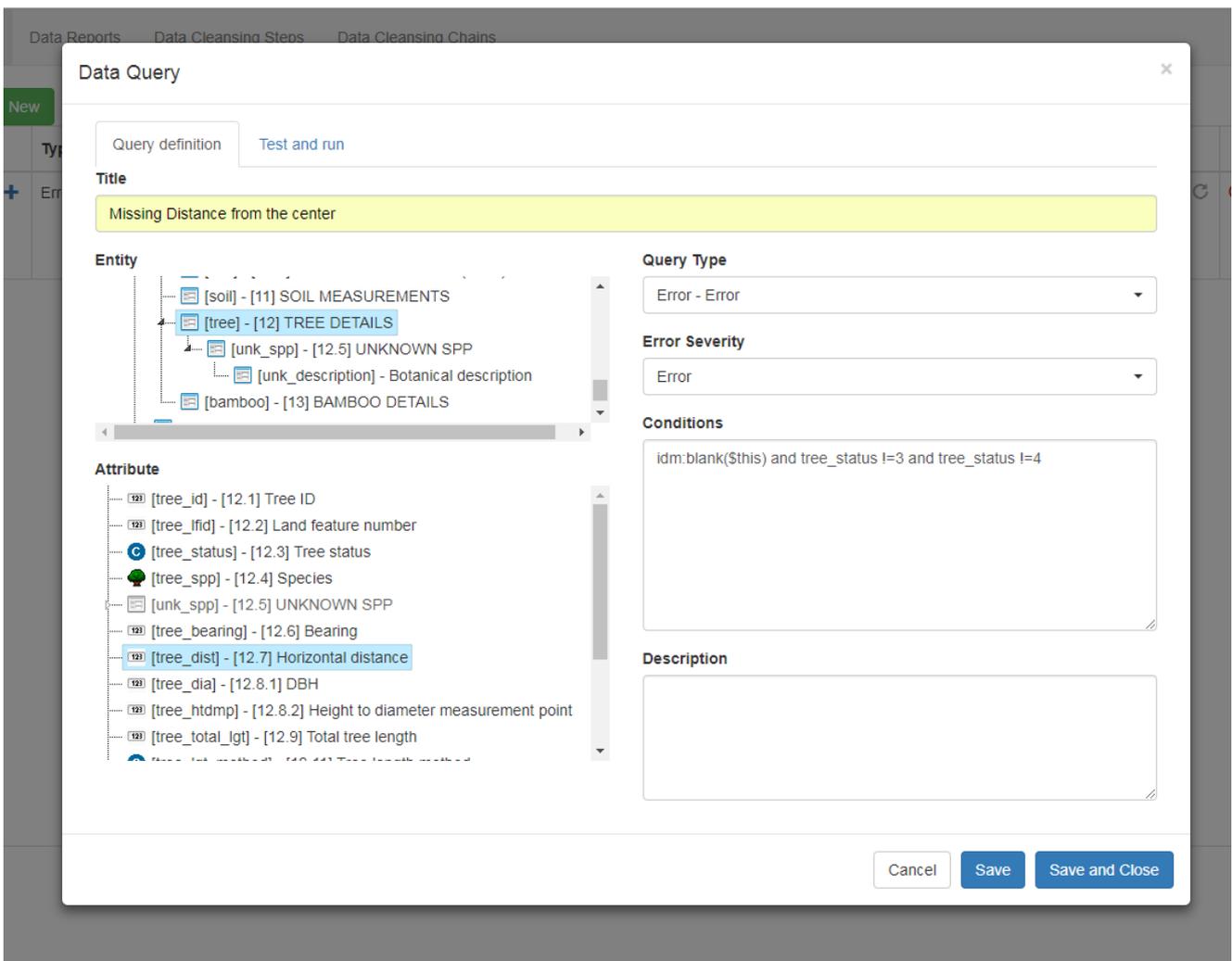


FIGURE 5: QUERY DEVELOPMENT FOR DATA CLEANSING

The graphical representation of the data and attributes table can be done easily and straightly in Open Foris collect using “Saiku”. In the afternoon session “Saiku” preparation was illustrated briefly.

- ✓ **Generate Saiku Database**: To run saiku analysis first a databade must be generated first
- ✓ **Start “Saiku”**: After generating database “Saiku” must start
- ✓ **Refreshing a Cube**: Press refresh cube to get all refreshed attributes list accordingly
- ✓ **Selecting a Cube**: To start Saiku representation select attributes cube for appropriate fields

- ✓ **Calculation:** different calculation can be done using ofc like- calculation of basal area

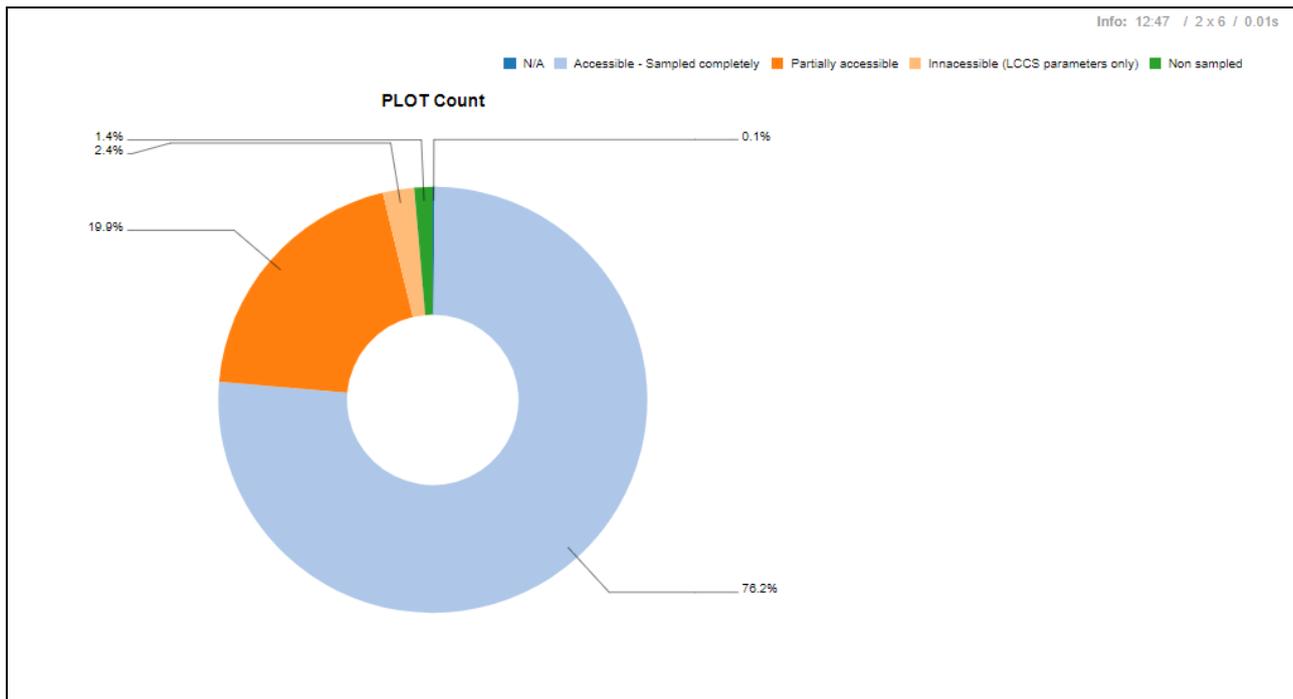


FIGURE 6: PLOT ACCESSIBILIT STATUS GRAPH GENERATED BY SAIKU

4<sup>th</sup> April 12, 2018

In the last day of the training Mr. Ricci Stefano, the trainer answered several queries of the participants.

- ✓ Including “**Zone**” **specific questions** in a survey design: Using the **relevancy** option zone specific questions can be prepared.
- ✓ **Functions costuming:** using expression language the functions can be customized
- ✓ **Several species list:** In ofc more than one species list can be used, but it need to be indicated in the relevancy.
- ✓ **Geo-Spatial functions:** this function is used to calculate distance using coordinates
- ✓ **Workflow:** Open Foris work in 3 phases- **Entry phase**> **Cleansing phase**> **Analysis phase**
- ✓ **Mapping:** Open Foris can view collected or pre-settled coordinates in map
- ✓ Review of **Data management process:**
  - Data **entry**
  - Data **export and submission**
  - Data **receive**
  - **Update** data into Open Foris
  - Data **storage and backup**
  - Checking **data quality**

Mr. Matieu, Chief Technical Advisor of FAO for the Bangladesh Forest Inventory were present in the closing of the training. FD staffs requested that another final training in Open Foris will be very fruitful for them.

## 4. RECOMMENDATIONS FOR NEXT STEPS

As per interactive discussions with the participants some issues are found which need to be updated-

- 1) Some changes in survey form design can be implemented in the next inventory of Bangladesh
- 2) Several improvements are needed in Open Foris like-
  - Export map from Open Foris into .kml format.
  - Improvement of error messages regarding different errors found in Open Foris.
  - If Open Foris is unable to perform any function due to any issue report need to be generated.
  - It should allow to export (.collect and .csv) data by selection e.g.- if one plot is selected Open Foris will export one plot data instead of exporting the total data set
- 3) Forest Department personals think that to gain excellence in Open Foris another final training will be very much effective.
- 4) Weakness areas of FD personal regarding Open Foris are needed to be identified for the training

## **APPENDIX 1. LIST OF FIGURES**

Figure 1: Open Foris interface with different functions .....	6
Figure 2: Example of a calculated value expression.....	7
Figure 3: A Comparison Validation check .....	8
Figure 4: Publishing survey for data collection .....	8
Figure 5: Query development for data cleansing .....	9
Figure 6: Plot accessibilit status graph generated by saiku.....	10

## APPENDIX 2. AGENDA

Day	Session	Description	Method	Responsible	
<b>01 April 2018</b>					
01	1	Security briefing	Briefing	Ricci Stefano	
		Introduction of Open Foris (OF) Collect	Lecture		
		Morning Snacks (10:00-10:30)			
		Main Features - Pros and cons of OF Collect	Lecture		
		Installation of OF Collect in each laptop (if possible)			
	2	Lunch Break (01:00-02:00)			
		Developing an OF Collect survey	Practical		
		Integration of complex attributes (relevance checks, validation rules, calculation reference key attributes, map options, logic checks etc.)	Practical		
<b>02 April 2018</b>					
02	1	Introduction and overview of OF Collect survey in BFI	Lecture		
		Morning Snacks (10:00-10:30)			
		Data entry using OF Collect Mobile with BFI survey	Practical		
		Lunch Break (01:00-02:00)			
	2	Discussion on problems faced in Open Foris collect data management	Participatory		
		Data cleansing in Open Foris (Data query, data report, cleansing steps, chains etc.)	Practical		
<b>03 April 2018</b>					
03	1	Any other important issue with OF Collect Mobile	Participatory and practical		
		Morning Snacks (10:00-10:30)			
		Data presentation in OF Collect (Saiku)	Practical		
		Lunch Break (01:00-02:00)			
	2	Introduction to OF Calc and examples from other countries on data analysis	Lecture and discussion		
<b>04 April 2018</b>					
04	1	OF Collect data workflow	Lecture		
		Morning Snacks (10:00-10:30)			
		Setting up data collection workflow	Practical		
	Lunch Break (01:00-02:00)				
	2	Establish a backup and archiving procedure	Practical		

## APPENDIX 3. PARTICIPANT LIST

Serial	Name	Gender	Organization	Mobile	Email
1	Zaheer Iqbal	M	FD		<a href="mailto:z.iqbal60@gmail.com">z.iqbal60@gmail.com</a>
2	Md. Tariq Aziz	M	FD	01790289328	<a href="mailto:Tariqaziz9718@gmail.com">Tariqaziz9718@gmail.com</a>
3	Md. Bablu Zzaman	M	FD	01718003727	<a href="mailto:Zzaman1978@gmail.com">Zzaman1978@gmail.com</a>
4	Md. Tauhidor Rahman	M	FD	01712643117	<a href="mailto:Touhidor.rahaman@yahoo.com">Touhidor.rahaman@yahoo.com</a>
5	Afroza Begum	F	FD	01711283846	<a href="mailto:b.afroza@yahoo.com">b.afroza@yahoo.com</a>
6	Md. Aminul Islam	M	FD	01712859311	
7	Md. Ashraf Hossain	M	FD	01711231648	
8	Shamima Begum Shewli	F	FD	01931407861	<a href="mailto:shewlibfd@gmail.com">shewlibfd@gmail.com</a>
9	Nikhil Chakma	M	FAO	01556371965	<a href="mailto:nikhil.chakma@fao.org">nikhil.chakma@fao.org</a>
10	Rajib Mahmud	M	FAO	01819066191	<a href="mailto:rajib.mahmud@fao.org">rajib.mahmud@fao.org</a>
11	Purnata Chakma	F	FAO	01776532969	<a href="mailto:prunata.chakma@fao.org">prunata.chakma@fao.org</a>
12	Md. Saidur Rahman	M	FAO	01775549091	<a href="mailto:mdsaedur.rahman@fao.org">mdsaedur.rahman@fao.org</a>
13	Md. Akhter Hossain	M	FAO	01827501435	<a href="mailto:akhter.hossain2010@cu.ac.bd">akhter.hossain2010@cu.ac.bd</a>
14	Kris Johnson	M	FAO		<a href="mailto:kristofer.johnson@fao.org">kristofer.johnson@fao.org</a>
15	Shrabonti Hira	F	FAO		<a href="mailto:srabonti.hira@fao.org">srabonti.hira@fao.org</a>
16	Falgoonee Mondal	M	FAO		<a href="mailto:Mondal.falgooneekumar@fao.org">Mondal.falgooneekumar@fao.org</a>
17	Ricci Stefano	M	FAO		<a href="mailto:stefano.ricci@fao.org">stefano.ricci@fao.org</a>

## APPENDIX 4. EVALUATION

L1_	1	Male	9	75%
L1_	2	Female	3	25%
		How often do you participate in training related to forest monitoring?		
Q1_	1	First time	11	92%
Q1_	2	1-3 every year	1	8%
Q1_	3	More than 3 per year	0	0%
Q1_	4	Regularly (approximately one per month)	0	0%
		I would describe my self as?		
Q2_	1	A professor/academic	1	8%
Q2_	2	A student	0	0%
Q2_	3	Forest Department staff	6	50%
Q2_	4	Government staff (outside Forest Department)	1	8%
Q2_	5	NGO staff	2	17%
Q2_	6	Private consultant	2	17%
Q2_	99	Other	0	0%
				0%
		My professional background relates most closely to:		
			TRUE	
Q3_1	1	Forester	6	50%
Q3_2	2	GIS/RS	3	25%
Q3_3	3	Statistics	0	0%
Q3_4	4	Social survey/assessment	4	33%
Q3_5	5	Economics	0	0%
Q3_6	6	Natural Resource Management	1	8%
Q3_7	7	Ecology	1	8%
Q3_99	99	other	1	8%
		My years of relevant experience is:		
Q4_	1	1-2 years	3	25%
Q4_	2	3-5 years	3	25%
Q4_	3	5-7 years	2	17%
Q4_	4	8-10 years	1	8%
Q4_	5	More than 10 years	3	25%
		The training was relevant to my daily work		
Q5_	1	Strongly agree	8	67%
Q5_	2	Agree	3	25%
Q5_	3	Neutral	1	8%
Q5_	4	Disagree	0	0%

Q5_	5	Strongly disagree	0	0%
		I had enough previous knowledge to understand the content of the event		
Q6_	1	Strongly agree	1	8%
Q6_	2	Agree	5	42%
Q6_	3	Neutral	4	33%
Q6_	4	Disagree	1	8%
Q6_	5	Strongly disagree	1	8%
		The training met my expectations in terms of the content and learning outcomes		
Q7_	1	Strongly agree	5	42%
Q7_	2	Agree	6	50%
Q7_	3	Neutral	1	8%
Q7_	4	Disagree	0	0%
Q7_	5	Strongly disagree	0	0%
		The learning resources provided were adequate and useful		
Q8_	1	Strongly agree	6	50%
Q8_	2	Agree	6	50%
Q8_	3	Neutral	0	0%
Q8_	4	Disagree	0	0%
Q8_	5	Strongly disagree	0	0%
		The resource person presented information in a way that i could understand and was easy to follow		
Q9_	1	Strongly agree	2	17%
Q9_	2	Agree	10	83%
Q9_	3	Neutral	0	0%
Q9_	4	Disagree	0	0%
Q9_	5	Strongly disagree	0	0%
		I feel confident to be able to carry out the tasks described in the training without supervision.		
Q10_	1	Strongly agree	0	0%
Q10_	2	Agree	8	67%
Q10_	3	Neutral	3	25%
Q10_	4	Disagree	1	8%
Q10_	5	Strongly disagree	0	0%
		I was pleased with the venue/meeting room/snacks etc		
Q11_	1	Strongly agree	5	42%
Q11_	2	Agree	5	42%
Q11_	3	Neutral	2	17%
Q11_	4	Disagree	0	0%
Q11_	5	Strongly disagree	0	0%

Q12		Are there other people/agencies/organisations that you think should have been included in the training?		
		BFRI		
		Universities		
		Forestry Students		
Q13		Any other comments?		
		Need more training of Open Foris.		
		Training duration was tight. Need refresher training after some practical application.		