USER MANUAL

Manual for Field Data Collection using Smart phone application

(Monitoring of NABARD sponsored watersheds using geo spatial Technologies)

National Remote Sensing Centre
ISRO, Department of Space,
Government of India
Hyderabad

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Manual for Field Data Collection using Smart phone application

NATIONAL REMOTE SENSING CENTRE

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13.	**Abstract (with Keywords)**	Android based App designed exclusively for the Field Data Collection under the project "Monitoring of the NABARD sponsored Watersheds using Geospatial technologies" for the NABARD. This App based interface developed by the National Remote Sensing Centre, ISRO, Dept. of Space, Govt of India, is a tool for field data capture of the development activities undertaken in the NABARD watersheds and also supports revisits for monitoring the status of the activity and includes a facility to upload photos on to the Bhuvan NABARD Server. The Manual also includes a Frequently Asked Questions (FAQ's) section. Keywords: Bhuvan; App, Monitoring, Watersheds, Field Data Collection			

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Contents

Mobile Software Application for Field Data Collection - Monitoring NABARD activities

1. Overview:

The watershed development programme is multi-disciplinary in nature with integration of many inter-related activities to achieve restoration of ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. Understanding and monitoring the different stages of numerous watershed development activities covering a huge area on regular basis is a big challenge. Remote sensing technology can play a major role in monitoring such activities. The high resolution satellite data (images) gives large perspective view of the ground situation and it can be monitored at periodic time intervals. Monitoring with satellite data at short time intervals may not be an optimal method to adopt. For such projects, field data collection using smart phone can be a good complementary solution. The collected field attributes with photographs information can be overlaid over the satellite data to give a good perspective of activities in the field.

The field data collection for monitoring activities was traditionally done using a manual approach like visiting field with hard copy form entry, consolidating the collected data at later date involving substantial delay. The recent technological advances in field of mobile devices, web solutions, and network connectivity have made it possible to design and develop innovative smart phone based solutions for field data collection to replace traditional methods and enhance productivity and data management.

2. Modernized Field Data Collection:

Towards realizing the objective of modernizing the field data collection process for monitoring watershed activities, the smart phone based application was suitably designed and developed. The application effectively utilizes free and open source

technologies and leverages the power of geo-visualization and data management capabilities of the existing Bhuvan platform.

The requirements of the solution were envisaged in two parts. 1) A device based software solution to collect field data and send to central servers. 2) A server side software solution to archive received data in centralized storage system, geo-visualization of archived data, provision to review each observation by technical experts on existing Bhuvan platform.

3. Description of developed solution:

The developed software is deployed on Android OS based smart phone. The rich and user friendly Graphical User Interfaces (GUI), which facilitates observer/user to collect data with ease, predominantly reduces data entry errors, reduces data organization and data retrieving difficulties. The collected information can be sent in near real time using GPRS / WiFi facility for analysis at office at near real time. The captured photograph enables user at office to understand and analyze the ground condition in pictorial form. The facilities are provided to send collected data in near real time if internet connectivity is available in field. There is provision to send it later in case of no internet connectivity is available on field.

4. Operating Procedure

This Android App is designed for use in phones with Android 4.4 KitKat or above and with a RAM of more than 2 GB.

This version supports geotagging of assets project wise (Project list as drop down is predefined) The following are screenshots representing the features in the mobile application and step by step working procedure to collect field data using the software.

4.1 Download the app using browser in the android mobile:

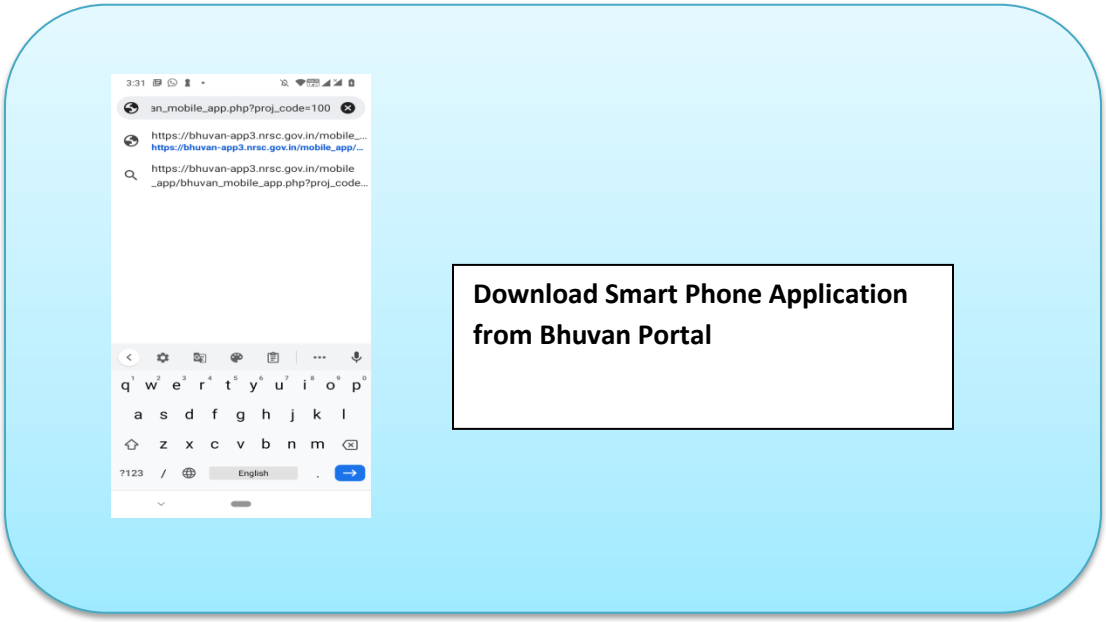

Figure 1: Open the browser and type URL to download the app.

The above screenshots in Figure 1 indicates procedure to open browser in the mobile and enter the URL for downloading the NABARD mobile phone application from Bhuvan Portal.

URL:

https://bhuvan-app3.nrsc.gov.in/mobile_app/bhuvan_mobile_app.php?proj_code=100

Step 1:	Indicates icon of browser to open the browser in the smart phone
Step 2:	Entering URL in the browser and click on Go button.
Step 3:	Tap top of smart phone screen and swipe down to open and visualize downloading of app.
Step 4:	Once the download completes, Click on apk file to initiate installation

The above screenshots indicate procedure to install the android application in the smart phone.

Step 1: Starts installation

Step 2: Completes installation procedure.

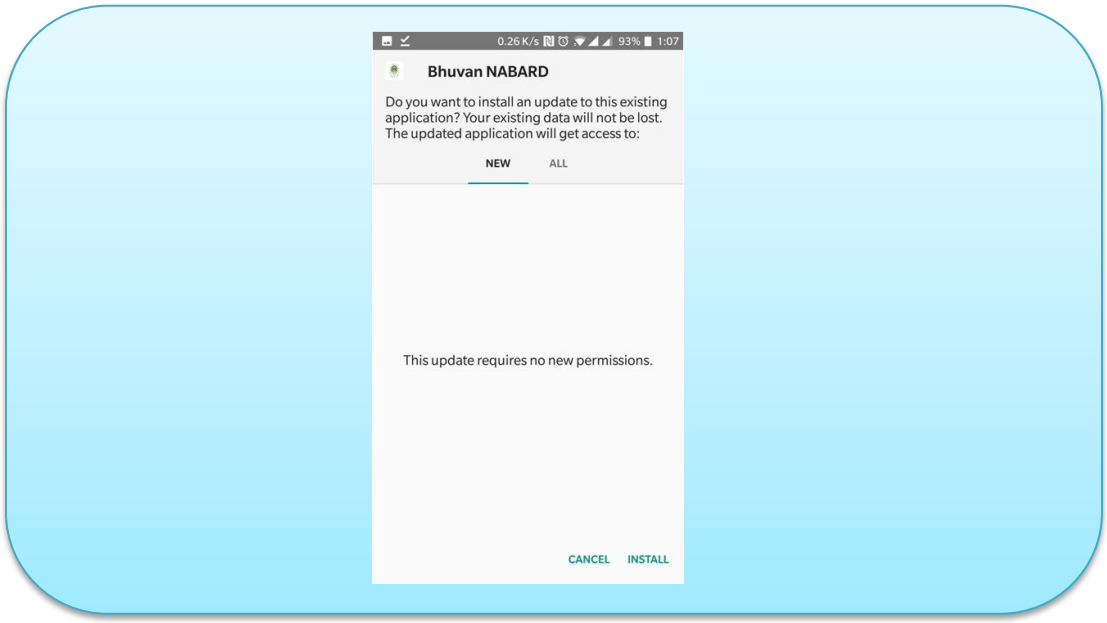

Figure 2: Installation of the s/w and NABARD icon in the smart phone

Open the app and setting up user profile (One Time Activity - OTA):
Note: For creating profile one should have the internet connection

Open Mobile app and set user configuration

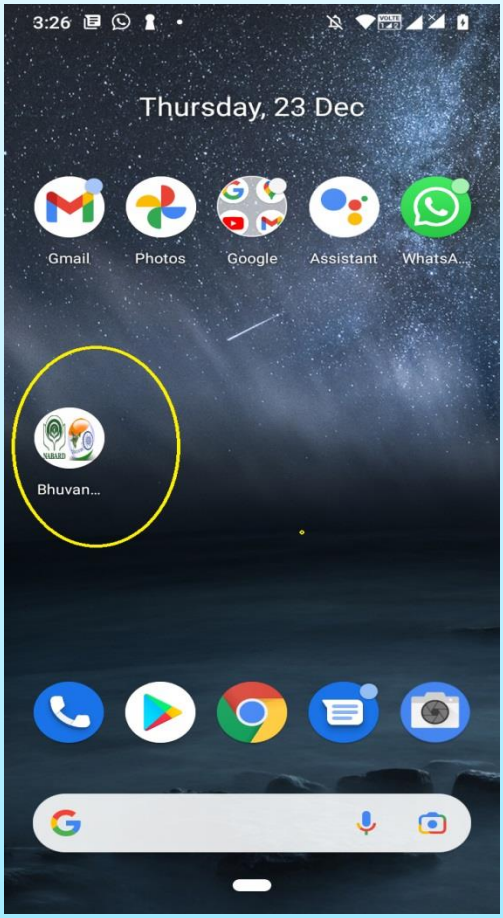

Figure 3: Open the Nabard app & Enter user profile and save

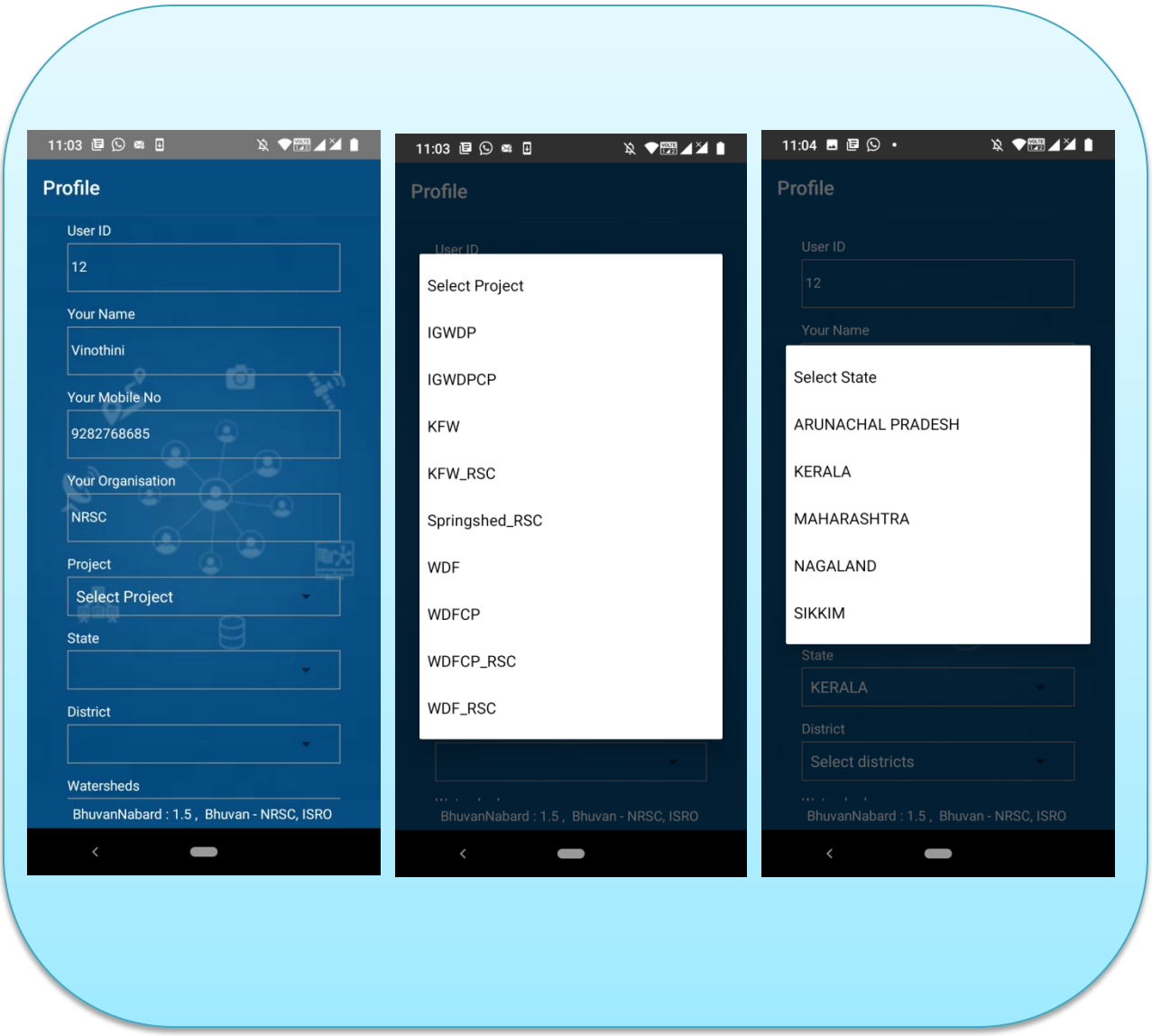

Figure 4: Filling the User profile – capture user details along with project

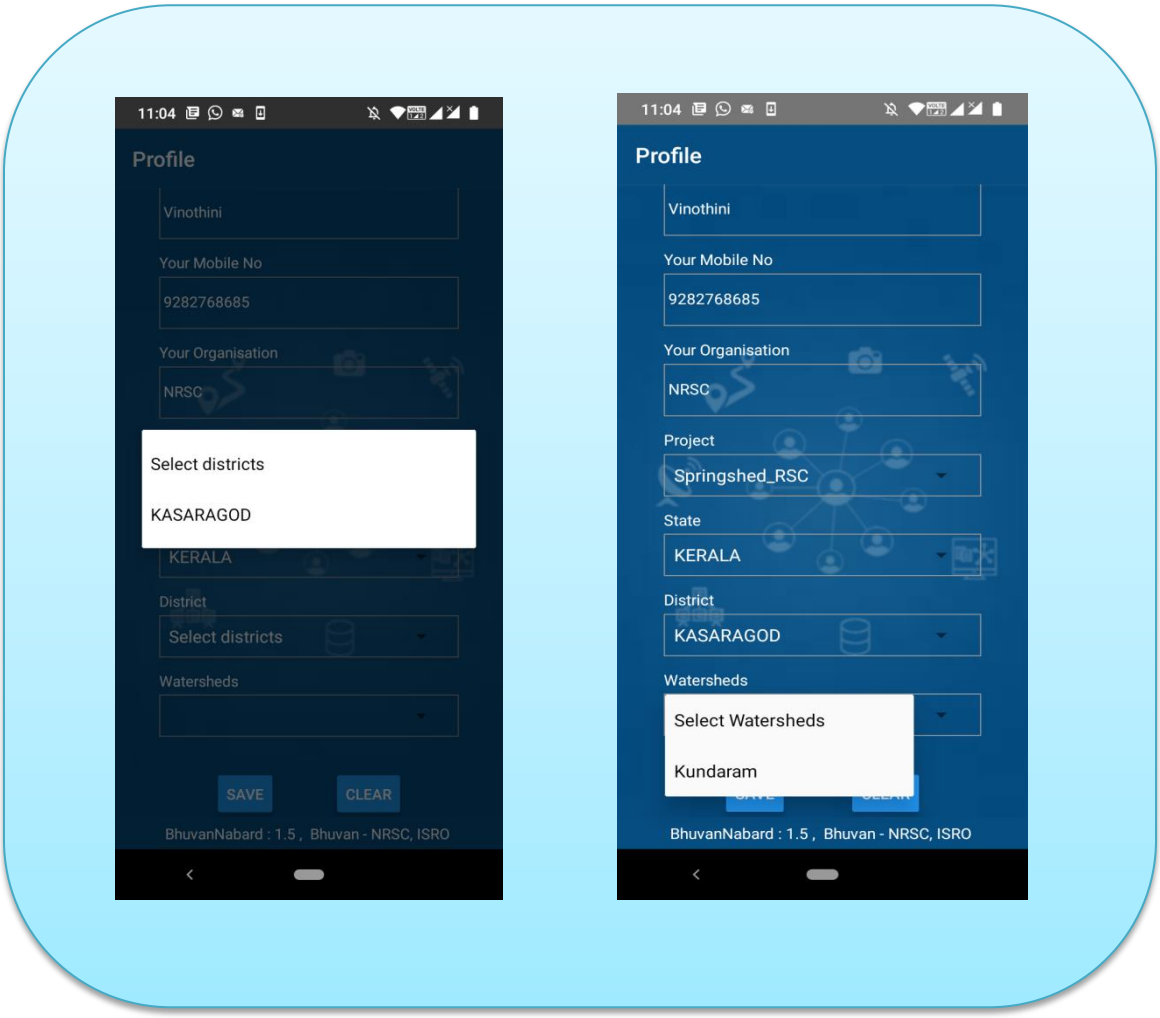

Figure 5: Selection of State , District & watershed name in user profile

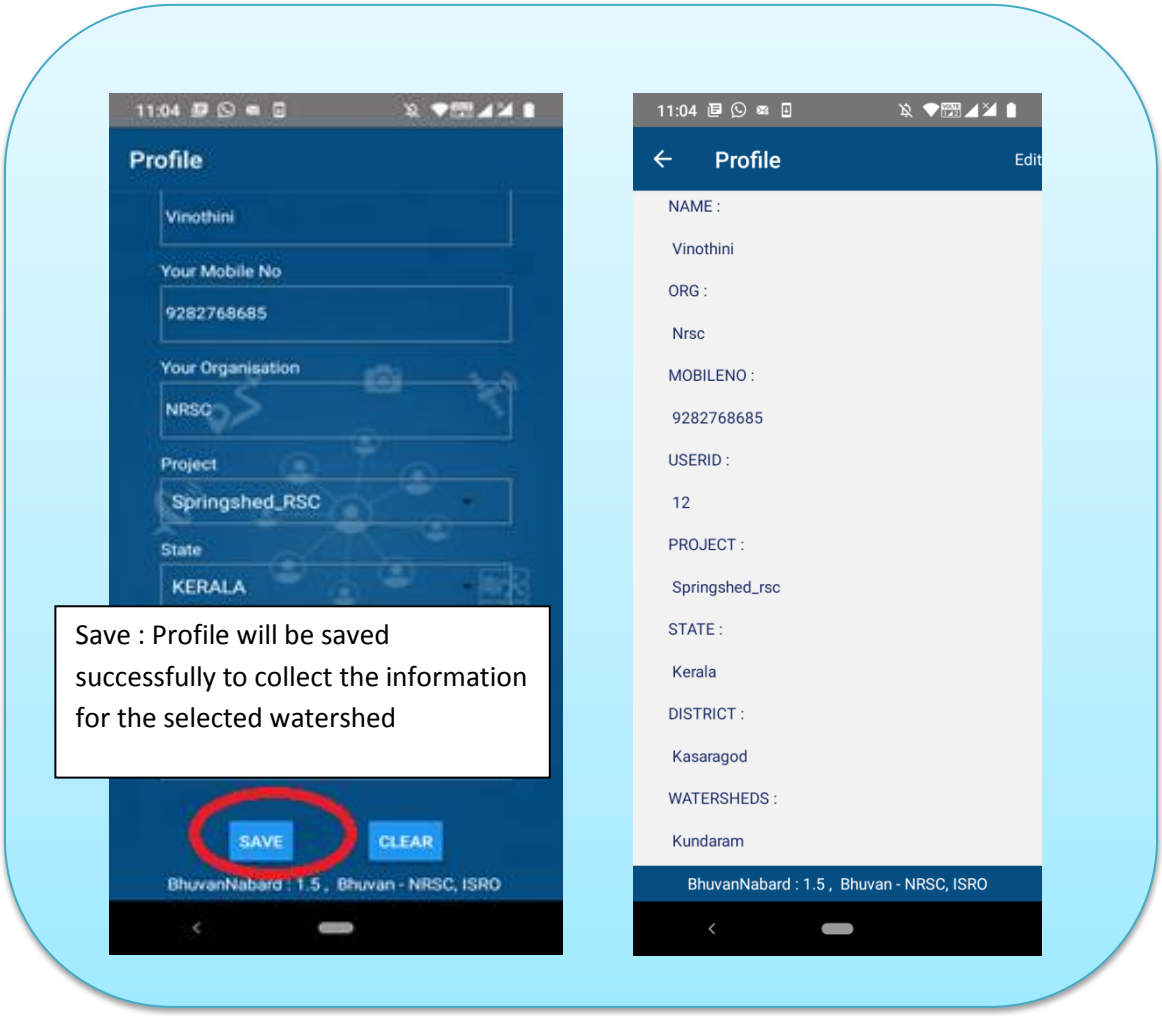

Figure 6: Profile Screen

The above screenshots indicate steps to open the BhuvanNABARD –Mob app, enter the user profile and save.

Step 1:	Click on BhuvanNABARD –Mob app icon to open the smart phone app
Step 2:	Open the app with provision to enter user's profile
Step 3:	There are 8 user profile parameters to enter. i) User id (User can define his / her own identification code (Alf- numeric code), ii) Name & Designation, iii) Mobile number, iv) Organization of the user, v)Project name, Vi) State Name vii) District Name and viii) watershed name
Step 4:	Save the entered parameters

Step 5: Landed to home page for collection of field data

Note: One should have internet connection for filling up the profile . Once the profile is filled the field data can be collected from the selected watershed only. For changing of watershed again profile information has to be filled by Clicking profile icon from Home page and click ‘Edit’ option for editing the profile

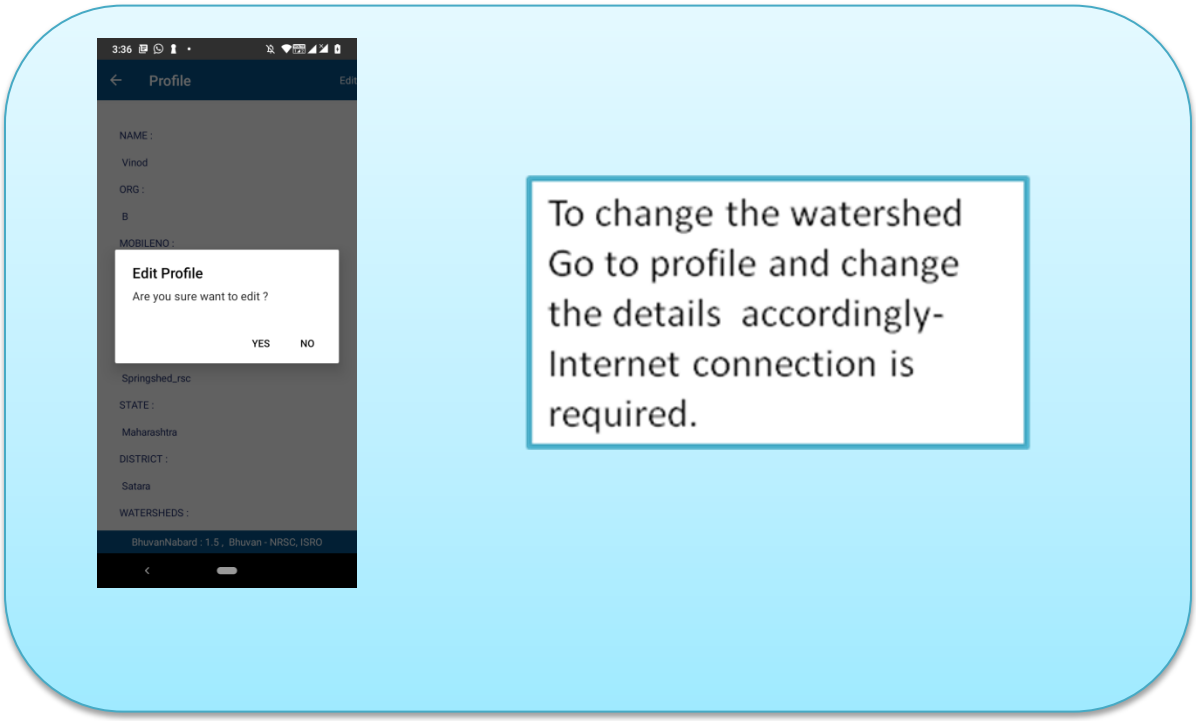

Figure 7: Changing of profile details

5. BhuvanNABARD Mobile app Features and Functionalities :

Features :

- Auto update - software automatically checks for available updates
- Work in both online and offline
- Send multiple files at a time using Sync Option

- Send Later option
- Auto Save Option in case of failure or network connectivity
- Viewing the uploaded data from server

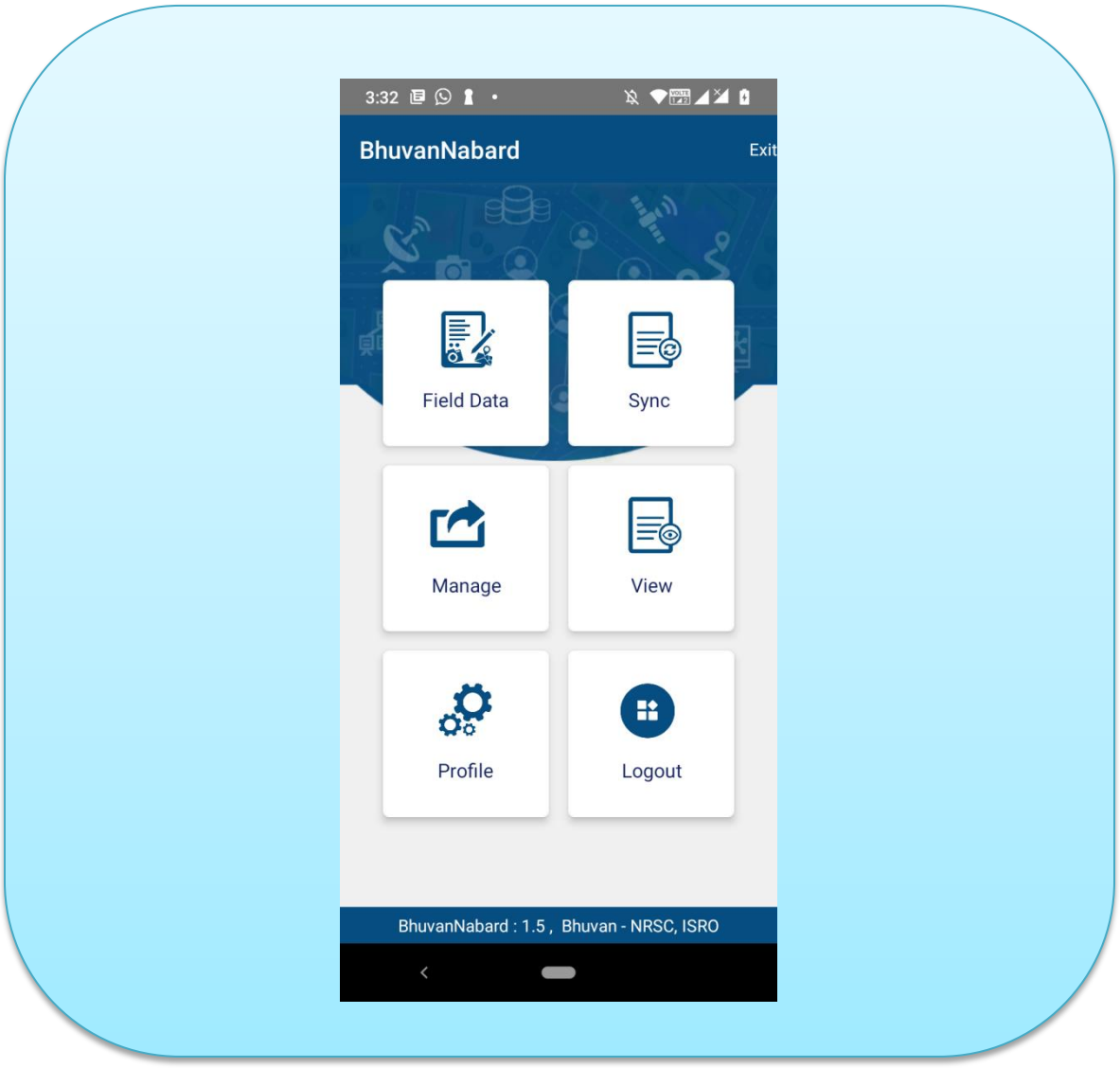

Figure 8: BhuvanNABARD Features

Functionalities:

Field Data Collection	The collect page has provision to a) Select watershed activity and sub activity, b) Enter attribute values, c) GPS (Capture location) d) Take photographs (2 no's), e) Provision to send collected data, f) Provision to save / send it later (in case of unavailable internet connectivity)
Sync	Provision to select one or multiple files and can send to the server
Manage	List all saved and unsent datasets for sending to the server. Using this option, user can edit the attributes information and send to the server
View	View the submitted datasets to the server
Profile	View the user profile information
Logout	Logging out from the application

6. Data collection and Sending to Bhuvan Server:

When the user clicks on BhuvanNABARD –Mob app icon the s/w opens and the process directly takes to main page, if the user has already provided user profile parameters.

After the Profile is created, it takes us to the main screen where we can select "Field Data" option. In this Page, user needs to select the Activity. The list of activities is different for Watershed development projects and climate proofing projects.

The list of main activities under climate proofing are: Additional SWC Structures , Vegetation Cover , Irrigation Management , Land Reclamation Measures , Soil Testing and Soil Health Cards , Management of Soil Structure, Soil improvement, Productivity Enhancement, Desalination and De-acidification, Crop Diversification, Sustainable NRM Practices, Integrated Farming Systems, Livelihood and Income Generation Activities, Generation of Agro-Advisories, Connectivity with Farmer Call Centers, Market

Information Formation of FPOs, CC Risk Management, Adoption of Energy Efficient Systems & Capacity building and Training.The list of the activities is given in Annexure I

The list of main activities under WDF / IGWDF projects are: NRM-Soil conservation, NRM-Water Resource Development, NRM-Plantation and Horticulture, Allied Activities – Dairy, Allied Activities –Poultry, Allied Activities –Poultry, Allied Activities –Goatery, Allied Activities -Sheep Rearing, SDP-Training, LWD-Livelihood Activities, Productivity Enhancement Measures, Social infrastructure development & Innovative activities. The list of the activities is given in Annexure-II

1. Selecting Watershed activity:

The process of collecting field data starts with selection of the watershed activity. The observer must choose appropriate watershed activity in the field.

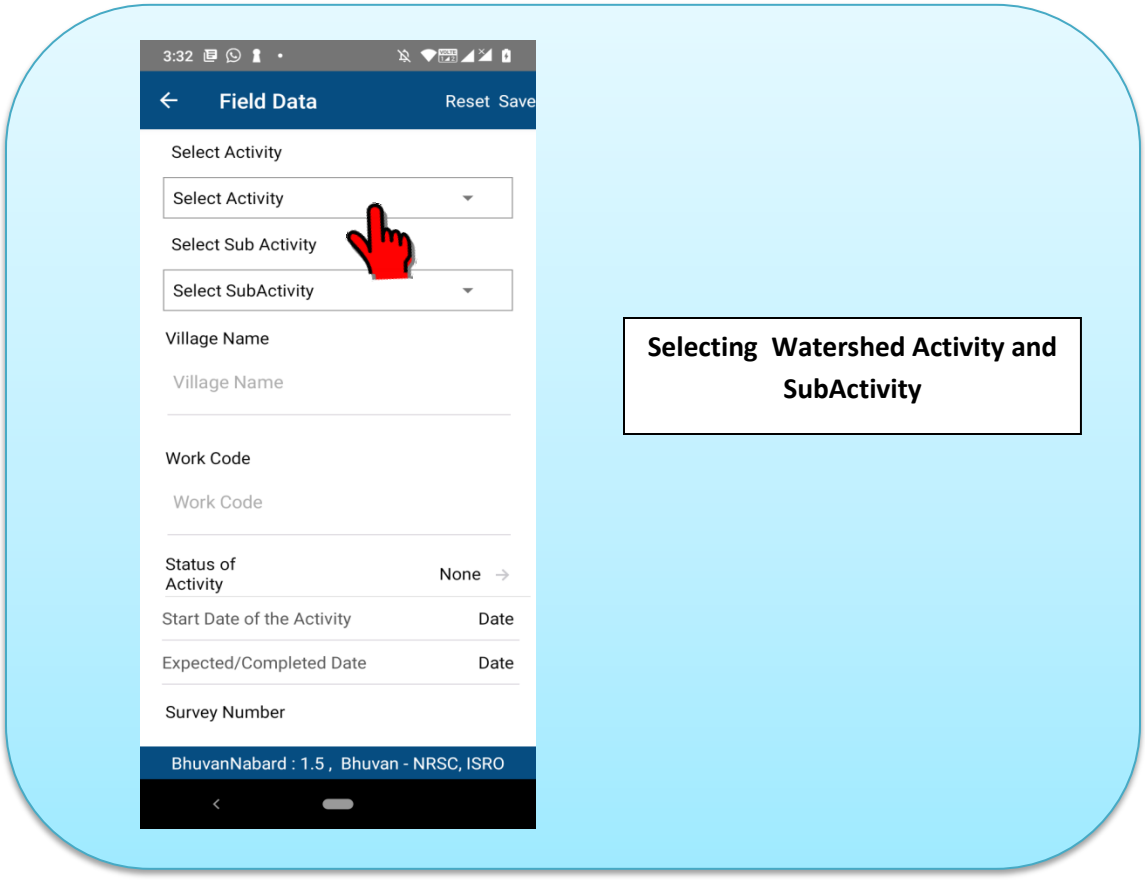

Figure 9: Select appropriate watershed activity

The user must select watershed activity from the drop down menu. Once it is selected, the buttons below select option gets activated and additional GUI options with provision to enter appears.

Step 1 : Click on "Select Activity" from dropdown menu

Step 2 : Once Activity is selected, corresponding sub activities will be listed. Click on "Select Sub Activity" from dropdown menu

Step 3 : Fill the attributes information

2. Enter Attribute values:

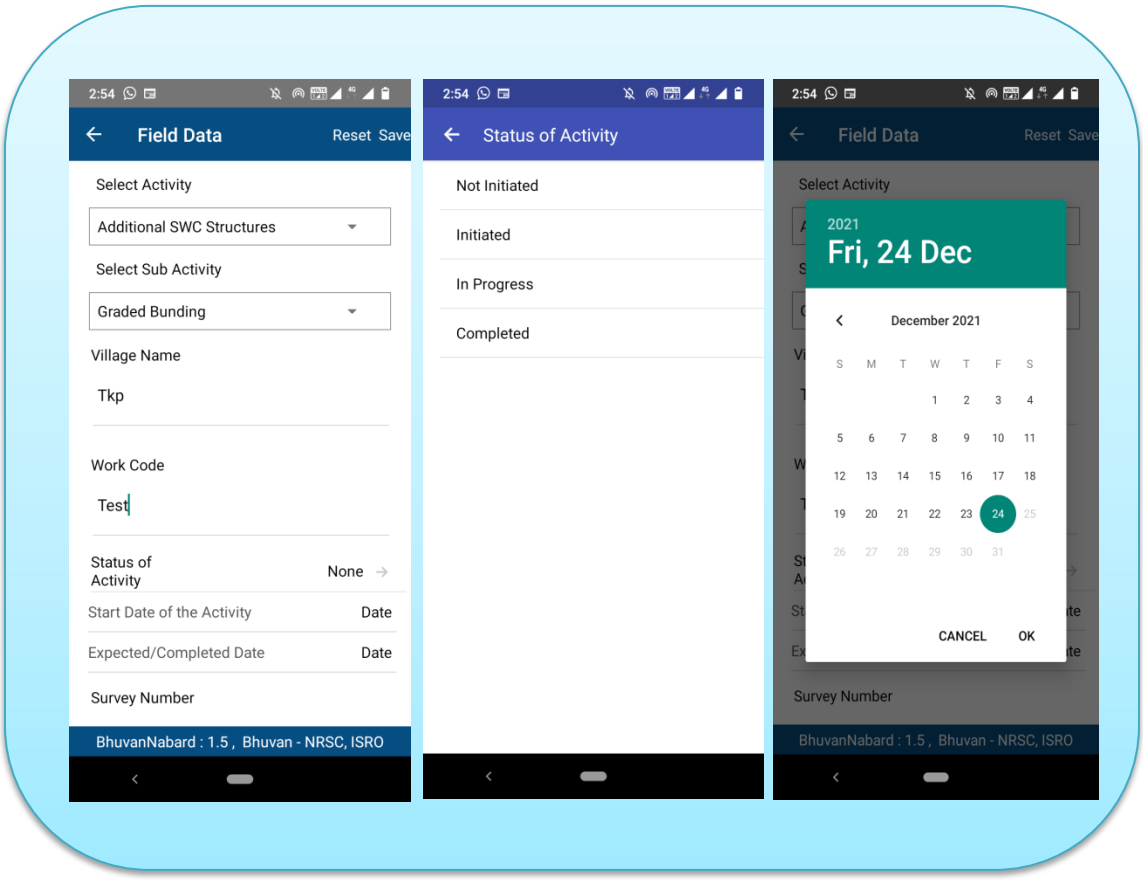

Figure 10: Attribute values

The appropriate attribute values are selected from drop down menu for watershed sub activity and its status, while the Village, Survey no, Beneficiary Name, Date of Completion and Amount sanctioned, Details etc are to be keyed-in.

3. Capture location information:

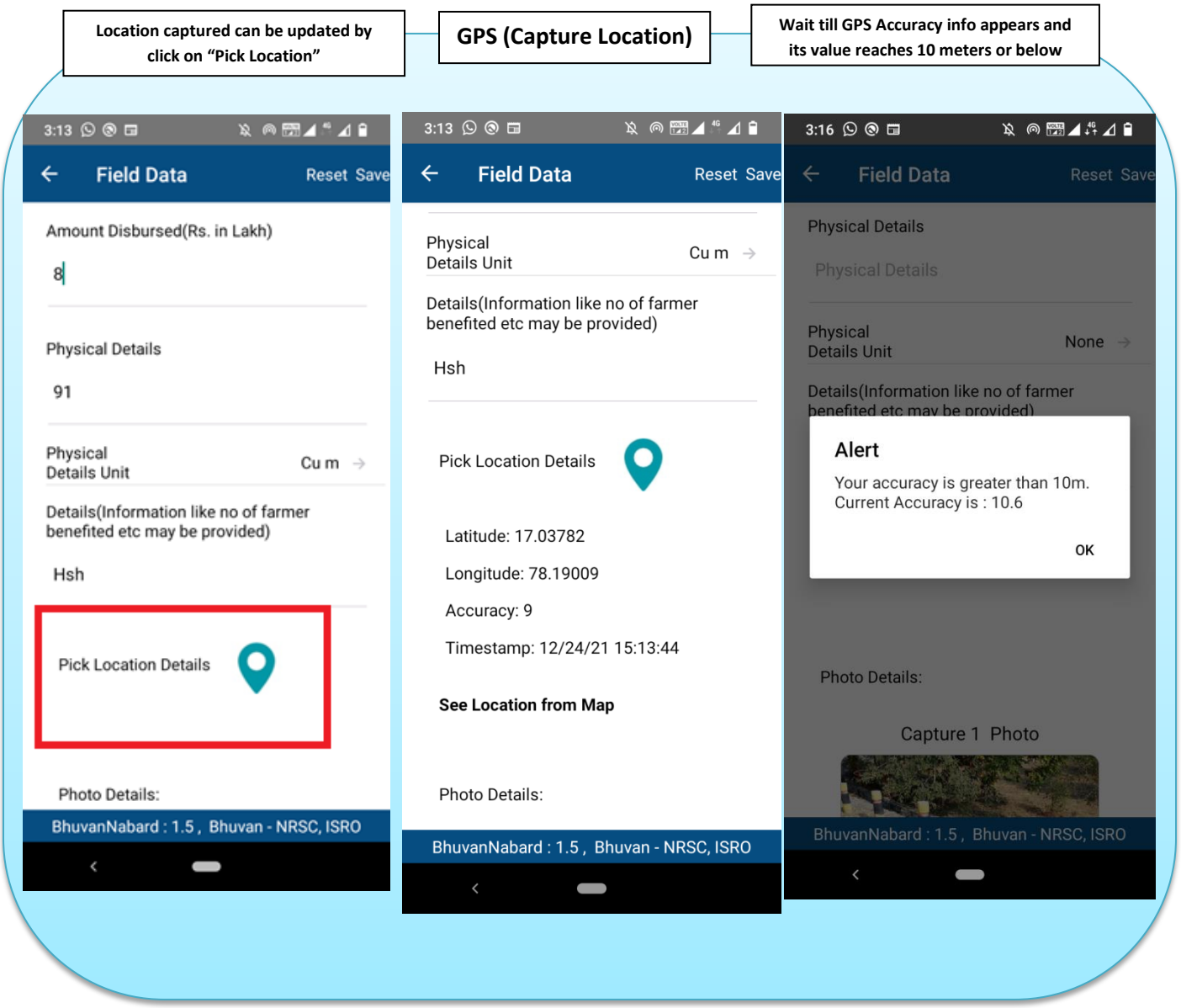

Figure 11: Capturing location information

The user must switch on the GPS / Location on his mobile and for this go to Setting >> Location and security >> Enable use GPS satellite and choose location accurate to street level / High accuracy.

To capture the location, the user must go to the centre of the structure / feature under the open sky. If the mobile has GPRS / 3G connectivity, initial tracking of GPS will be fast. The accuracy of the position slowly improves with the time. The user must be **10 meters** or below and click “Pick Location Details” to collect the location details. If the Captured Location is greater than 10 meters, an alert message will be appear.

4. Map interface on the App:

A map interface is a new feature introduced in this version of the App. On selecting the map button a window opens on the mobile which dynamically shows the current location of the user, as a marker. As the user moves from one location to other, there is also a current location refresh enabled .In case there is no data connection on the mobile, alert message will be appear. A user can use this option if data connection is enabled for accurate location information in field.

5. Take photographs:

Click “Capture Photo” button in the application uses native camera application of the android mobile. This enables user to capture photograph and save. Along with photographs, it also captures latitude, Longitude, accuracy, orientation and time stamp.. A preview of captured photo will be displayed after captured the photo

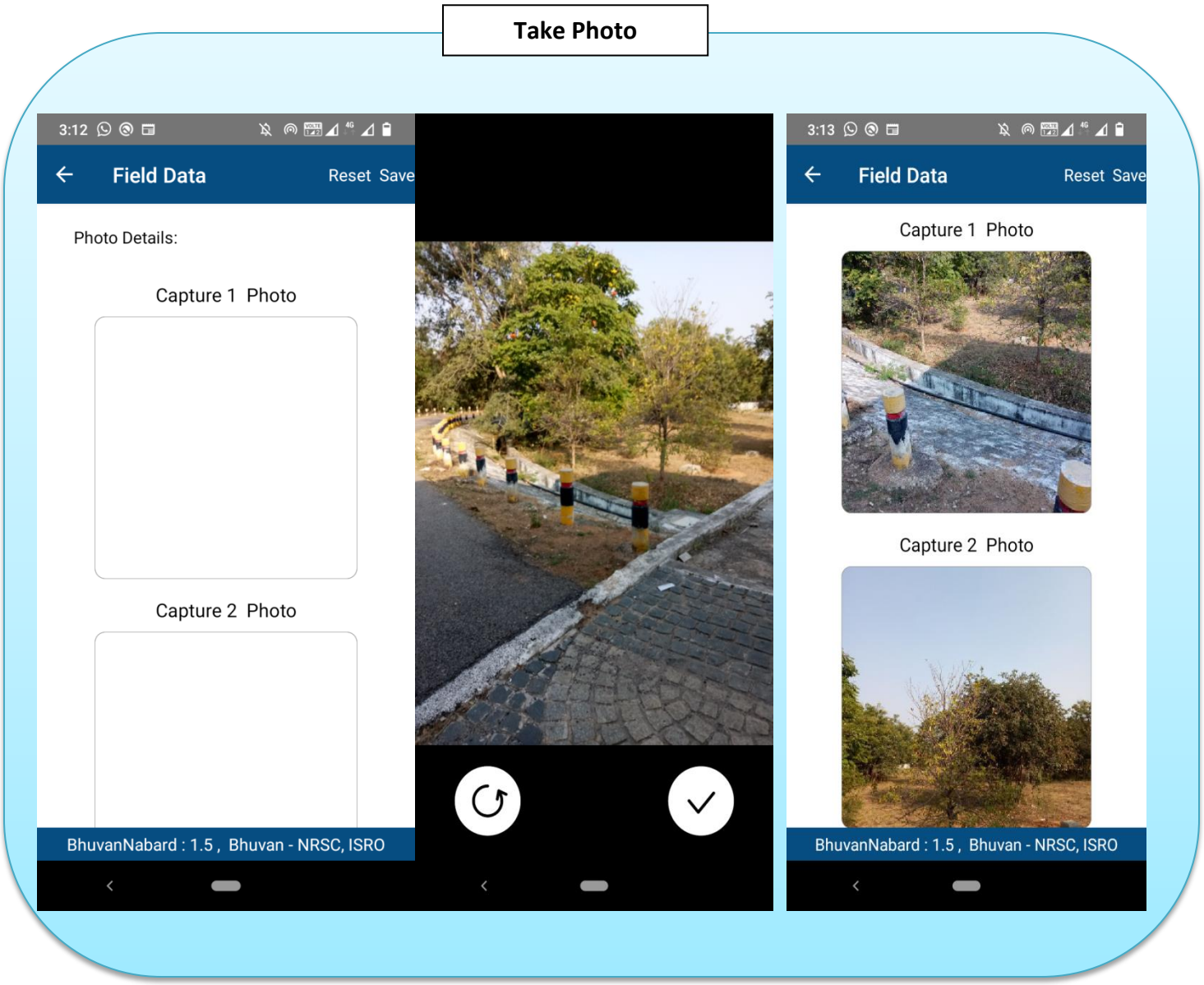

Figure 12: Take photo using mobile native camera

Note: Taking two photographs is mandatory for each geotag / asset. If at any point only one photograph is taken the system will prompt at the time of sending or saving the geo tag where the second photograph has to be taken.

The user can also reduce the resolution to the lowest possible for optimizing the data transfer load from mobile to Bhuvan server.

6. Provision to send/save collected data:

The send feature of the BhuvanNABARD app enables user to send collected data to Bhuvan server. This send requires internet/ data connectivity in the field through GPRS /3G/ WiFi. The sent data consist of information depicted and users profile information is also tagged such as user id, observer name, phone number and organization. An alert is displayed once the data is received at Bhuvan server.

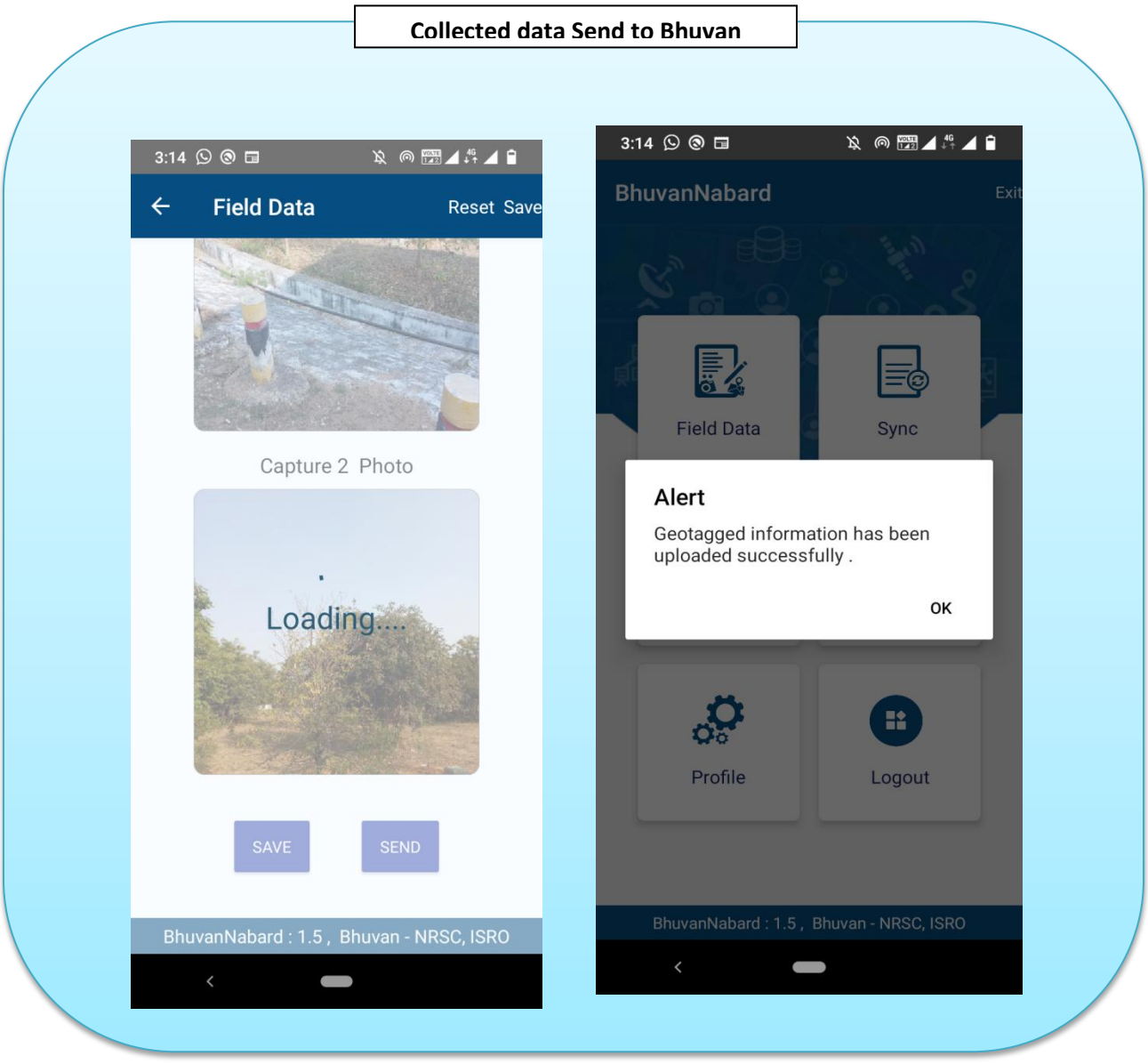

Figure 13: Collected data initialized to send to Bhuvan server. Alert message received after data reaching the server

However users can use “Save” the observation details for sending the information later to the server. This data can be sent later to the Bhuvan server as some other details also may be added in the office and then after checking the correctness of the data entered. Thus there is a further chance to edit/ modify the data before sending.

7. Provision to save observation (send later):

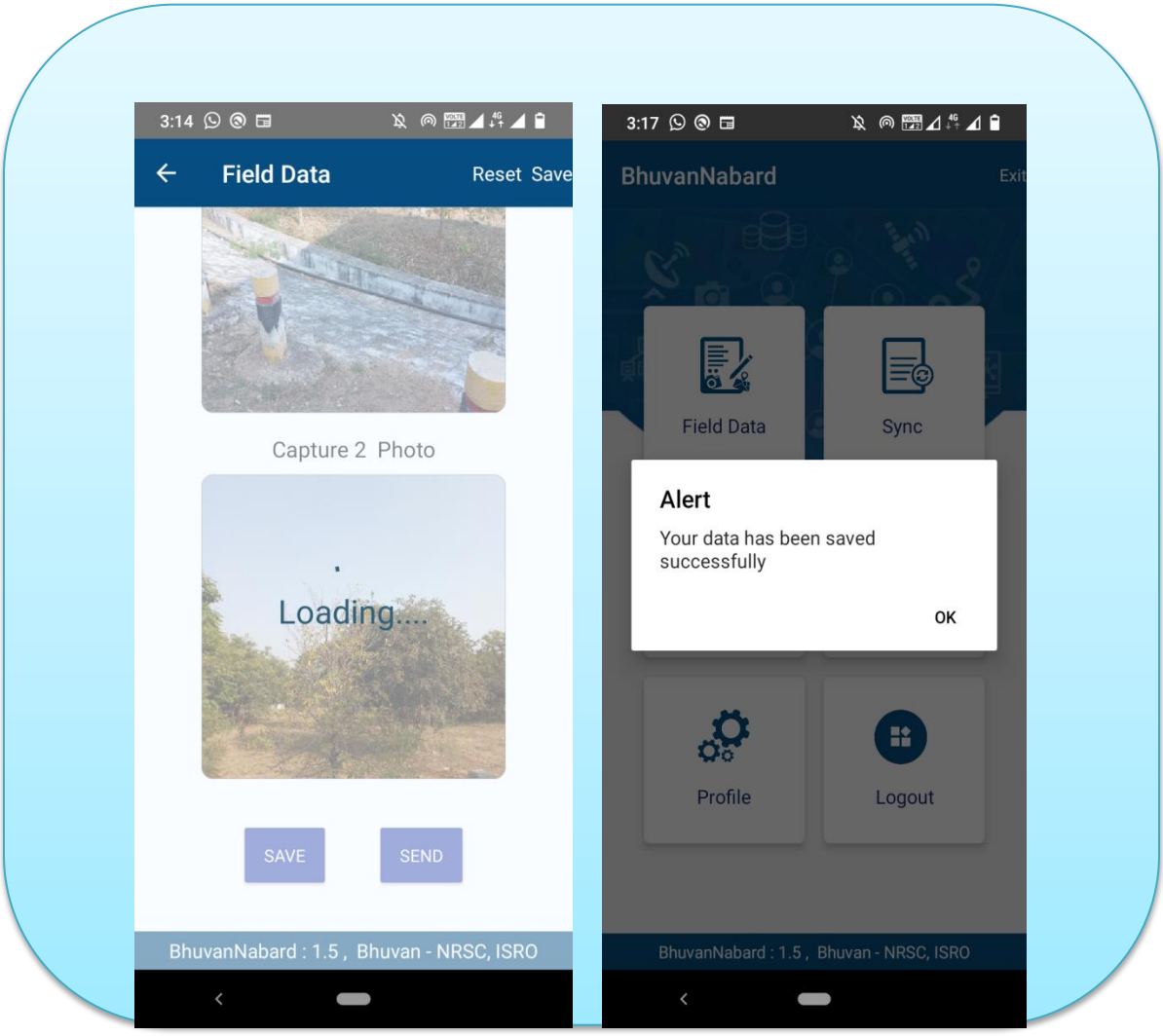

Fig 14 : Save – option

The “Save” feature of the Bhuvan NABARD app allows user to store collected data in send later location of the mobile. This feature is generally used when mobile data/ internet connectivity is not available in the field. The collected data can be sent when mobile data/ internet connectivity is available in the mobile.

8. Provision to access datasets:

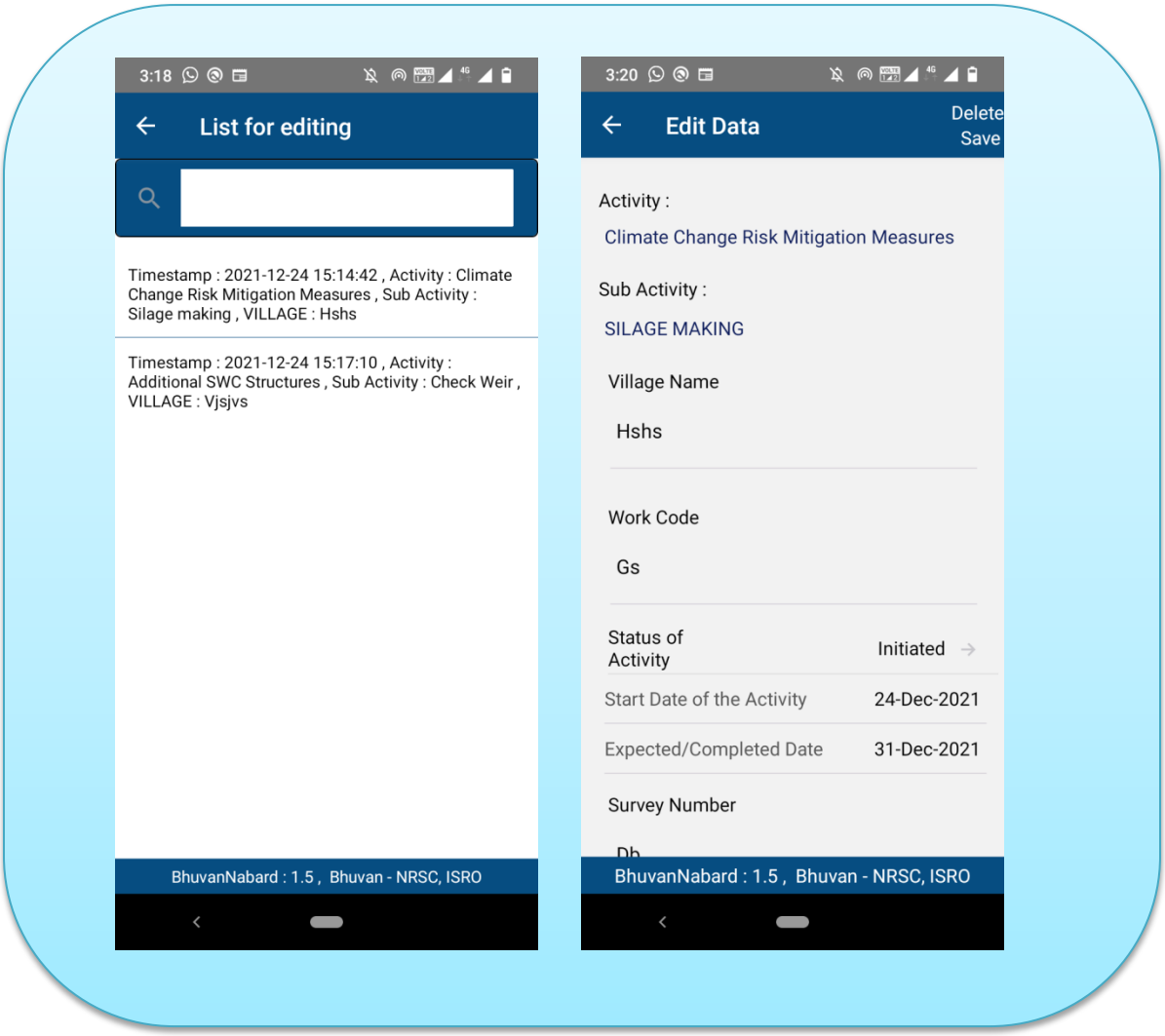

Fig 15 : Manage – Edit – option

The datasets feature “Manage” button of the software allows user to access all saved and unsent data. Once user click “Manage“ option, saved and unsent data will be listed. Once the datasets is selected, captured information will be displayed. User can edit the attributes information except activity and sub activity. Default location and photo cannot

be edited under manage section. So, user can edit the details and send to the server immediately or can use “Save” option for save it. Important feature here is that the user has facility to edit or modify the observed attribute values before sending. The observation also can be deleted, if it is not required in the mobile.

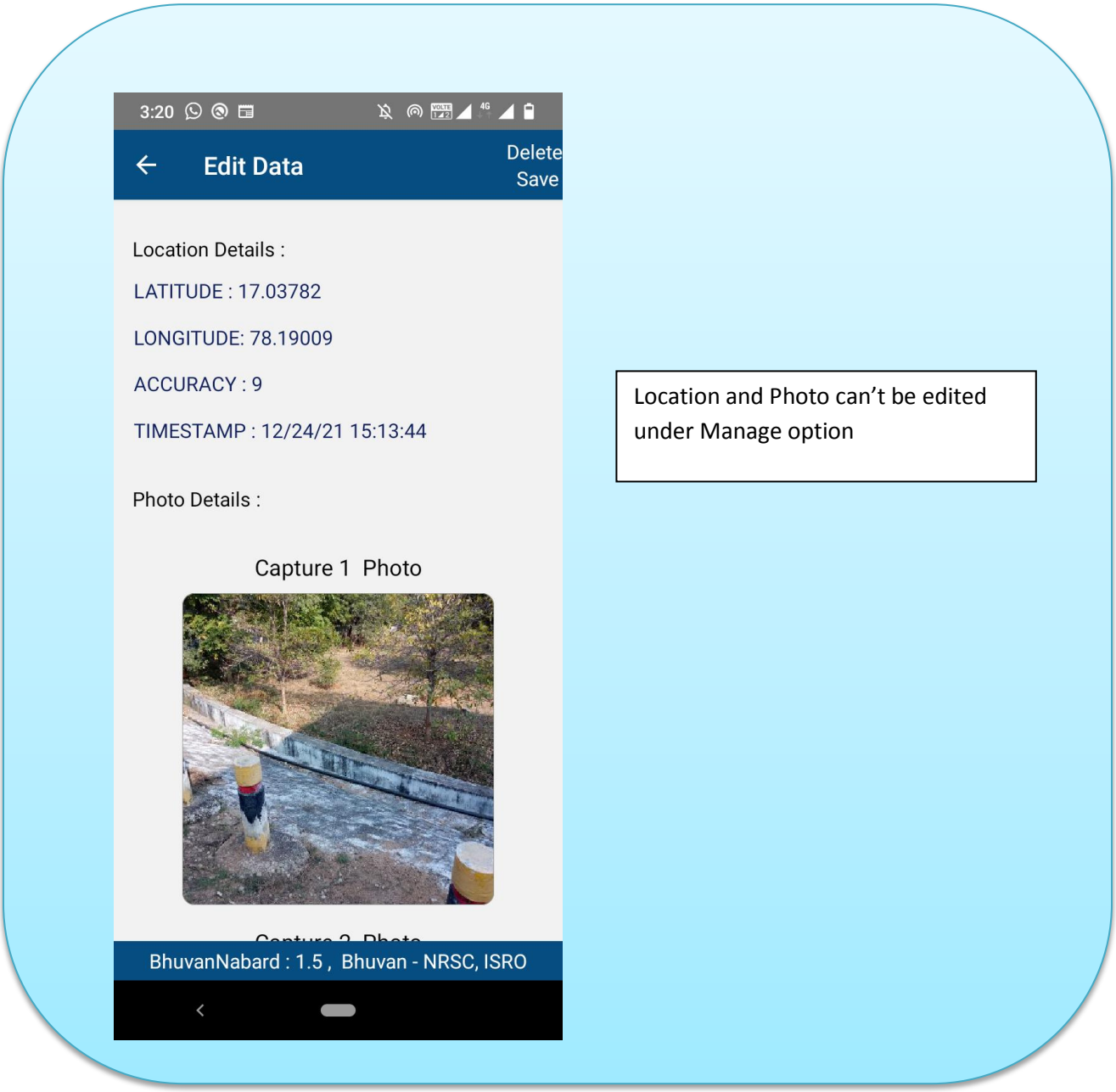

Fig 16 : Edit – Preview option - selected dataset to Edit, Send and Delete

9. Provision to Send All using Sync option :

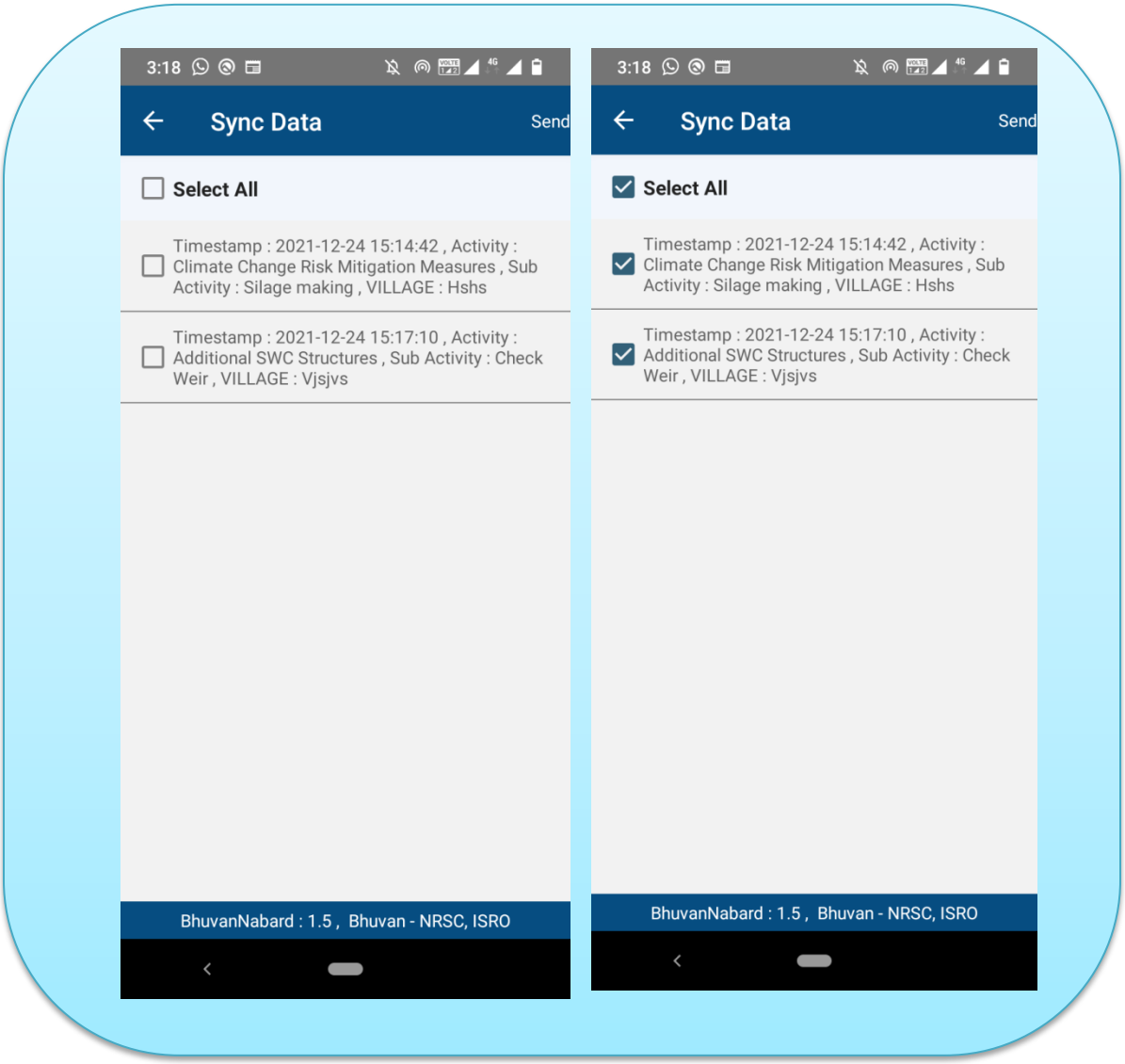

Fig 17 : Sync – option

If the user wants to send all collected saved/unsent data immediately to Bhuvan server, can use “Sync” Option. Using this option, user can send one or multiple times at a time to server.

10. Viewing the geo-tagged points on Bhuvan Server

The View option of sent datasets enable user to visualize the attribute value of the observation with photographs taken. This is an un-editable feature since the observation is already sent to Bhuvan server

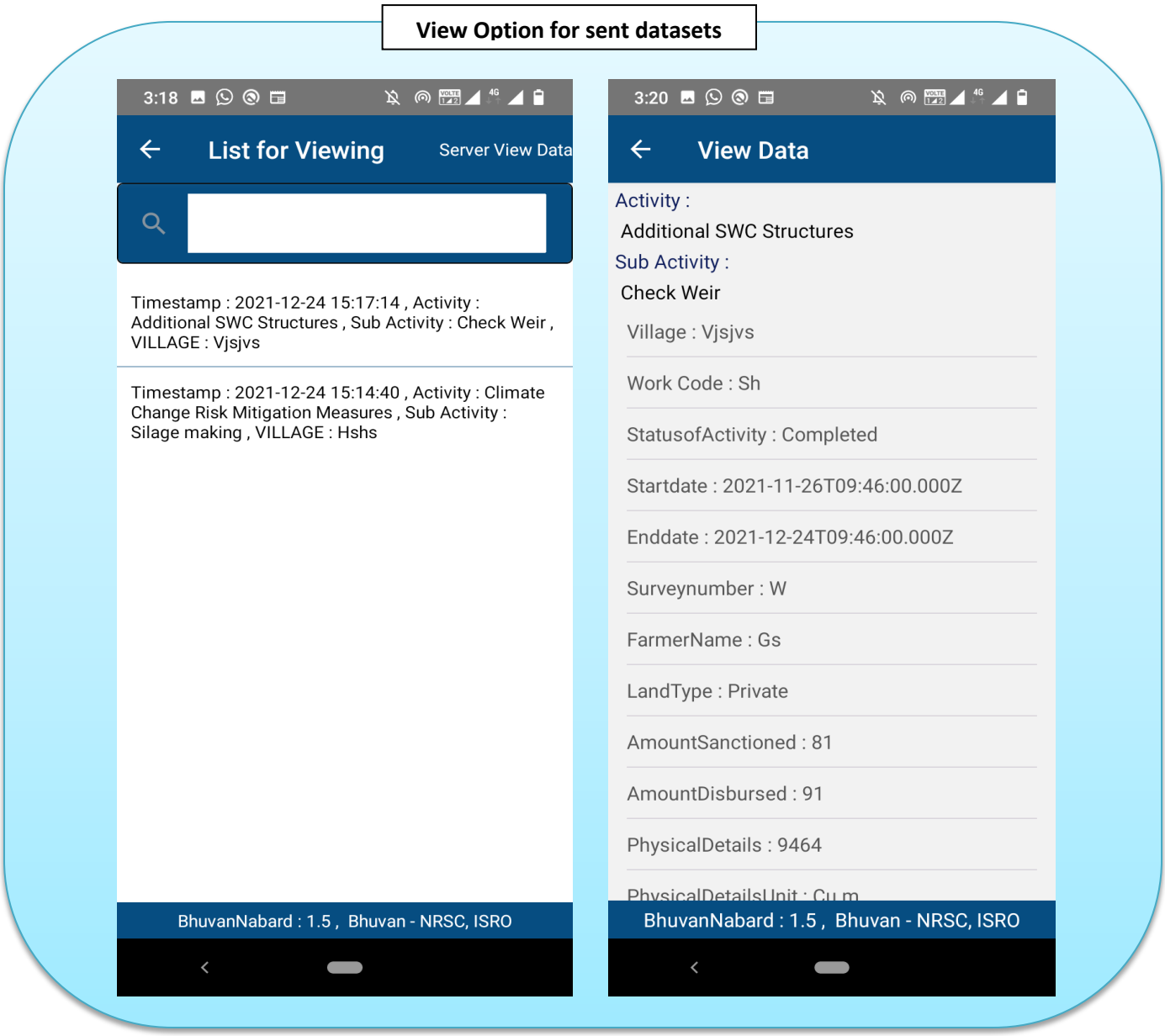

Figure 18: View sent datasets

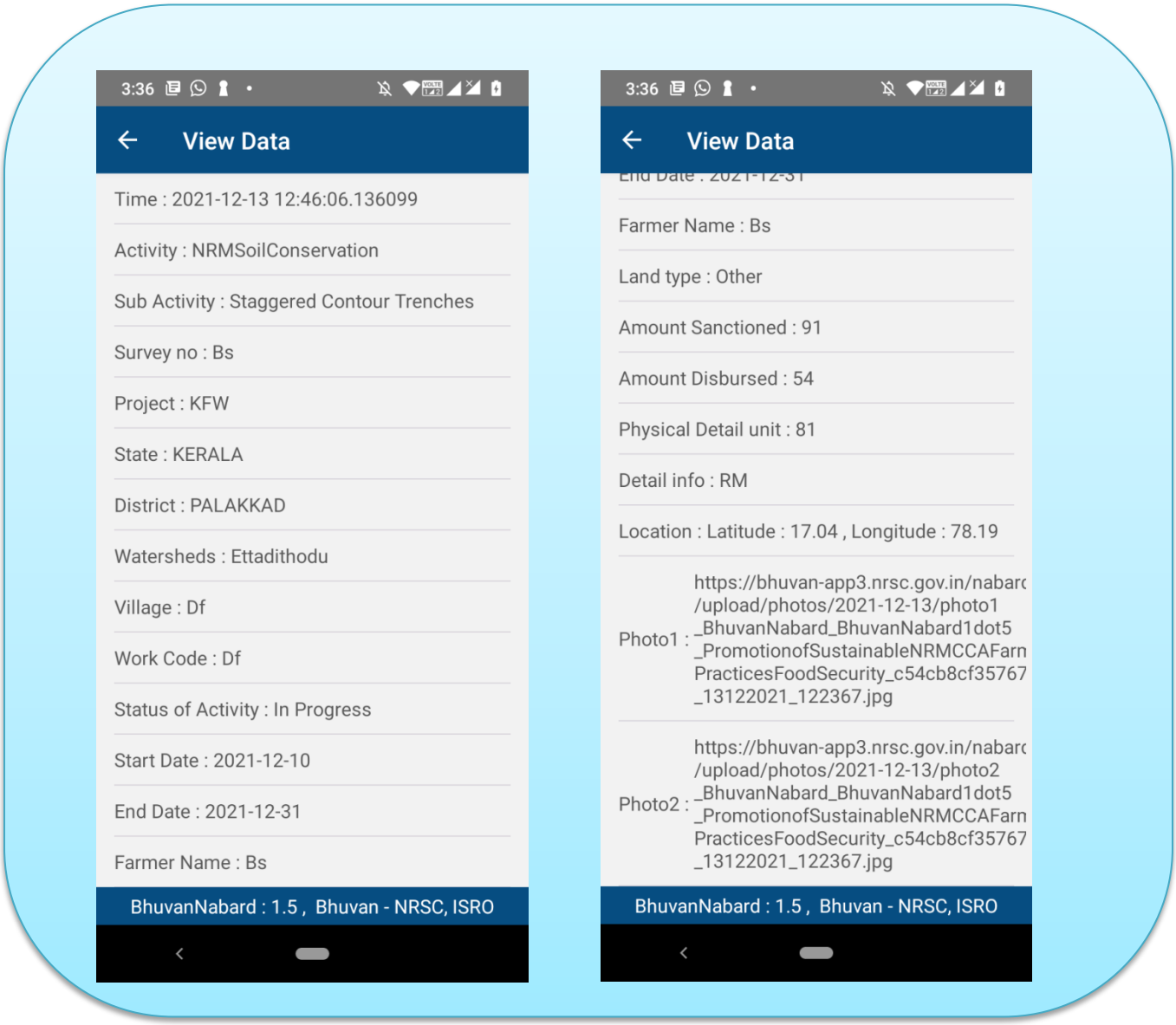

Figure 19: View sent datasets (from server fetch)

7. Conclusion

Overall deliberation of this manual is focused on ANDROID Mobile based tools for field truthing protocol. Mobile Smartphone application brings out the importance of precise field data collection for watershed monitoring. Software tools are specially developed to address this aspect as part of monitoring under the project.

Information collection when beamed to central server turns in to a value added service and builds a comprehensive database for evaluation. Satellite image based change detection, coupled with field information helps to evaluate the progress on the ground. Integration of 3 streams of information, namely, Satellite imaging, Mobile smartphone based field information and Geospatial technology would help in unbiased and reliable monitoring of watersheds across the country on a continuous and consistent basis.

Android tool hence enables a comprehensive field truthing of the micro-watershed activities. It can expedite vast field information collection and real time updating on the web portal. This would help decision makers to assess the condition of implementation at the earliest.

FREQUENTLY ASKED QUESTIONS (FAQ'S)

1) From where can I install the mobile application?

Ans: Key in the URL

https://bhuvan-app3.nrsc.gov.in/mobile_app/bhuvan_mobile_app.php?proj_code=100

on mobile browser or visit the home page https://bhuvan-app1.nrsc.gov.in/nabard/ for the latest link. The mobile application (.apk) file gets downloaded in the download folder. Click on the file to start installing. User will be required to enable unknown sources option in security setting of android.

2) Is the NABARD-Mobile application available in Google Play store?

Ans: No.

3) Is the mobile App is available for Apple and Windows devices?

Ans: No, the application is currently only available for Android platform.

4) What is the minimum specification required for Android device?

Ans: Android 4.4 or above, 2GB RAM or above, 8GB local storage or above, GPS sensor with A-GPS facility, 2G/3G/4G and WiFi facility.

5) What to do if there is insufficient storage in my mobile?

Ans: Either change the mobile to one with larger local storage or create space in the local storage by removing other applications.

6) What should I do if I need to change my mobile?

Ans: You need to register again using new mobile.

7) What to do if my mobile get stolen / lost?

Ans: Install mobile App in the new mobile and register again.

8) Can I use the mobile application without 3G?

Ans: Yes, you can use 2G or 4G or WiFi with internet facility.

9) Can the mobile application work without 2G/ 3G/ 4G?

Ans: Yes, Internet is not required to geo-tag an asset but it required to send the captured geotag data. You can connect broadband service at office or home through

WiFi facility and send data.

10. Where do I view the collected asset information and geotags?

Ans: In mobile application – user can click " View " Option to see the submitted data to server . In web - The Asset geotags will be visible on the Bhuvan -NABARD portal. RO's can login with the bhuvan username and password and view the Assets geotags in the respective State while the DDM's can login with the bhuvan username and password and view the Asset geotags in the respective District. Any citizen also can view the moderated geotags at National, State and District level.

11. What is the role of the DDM in Bhuvan?

Ans: After the Asset geotags are collected the DDM need to register and login to portal and moderate the Geotags collected and either approve/ accept or reject any geotag.

12. How should the DDM'S register to use Bhuvan NABARD?

Ans: The user name and passwords are created at NRSC for all the DDM's. In case the username and passwords for a particular district are not known, the concerned DDM need to contact the RO / HO or from the project team at NRSC.

13. How should the PFA's register to use Bhuvan NABARD?

Ans: The user name and passwords for PFA's for every watershed are created at NRSC.

14. What if the Field personnel/ PFA'S are transferred to different District/ Project areas?

Ans: The Field functionaries need to change their District and Project name by editing the. After this they may again resume their task of geotagging.

15. How many pictures can I take for one asset?

Ans: Two pictures are to be mandatorily taken for each asset. No more than two pictures can be uploaded for one asset.

16. What is the GPS Accuracy required?

Ans: Switch on ‘High accuracy’ mode. The GPS accuracy recommended is less than 10m and most of the new generation mobiles support even less than 5m.

To get the best possible signal, one needs to be prepared to use a bit more battery than normal. It’s a necessary sacrifice, and you can always reverse it later when you don’t need to use GPS. Enabling this is easy; just follow a couple of steps and you’ll be on your way.

Go into android Settings and tap Location and ensure that location services are on. One should be able to toggle it at the top right hand of your screen. It should be green and the button to the right.

Now the first category under Location should be Mode, tap that and make sure it’s set to High accuracy. This uses your GPS as well as your Wi-Fi and mobile networks to estimate your location. This will use more battery, but will utilize all available methods to give you the most accurate location possible.

Keep the GPS signal active.

One of the main problems that is encountered when going from one App to another is that the GPS is turned off to save battery. If for example you are navigating and want to take a look at your latest messages, your GPS could be turned off. However it is suggested to keep the GPS signal active.

Refresh your GPS Data.

Sometimes a device will get ‘stuck’ on certain GPS satellites, even if they’re not within range, causing it not to work properly. User may exit the App and open the application again.

If the above doesn’t work, probably, one should try with another GPS Android Phone.

17. **How far can I move to take the picture after locking the GPS?**

Ans: You can move to an extent of covering full asset in the camera. The first photo should represent extent of the work or asset and Second photo should represent intensity of work or show the beneficiary incase of activity is involving an individual beneficiary.

18. **What are the multiple ways in which an asset can be geotagged and uploaded?**

Ans: The user has to use features provided in the mobile App only to geo-tag an asset.

19. **Can I use two mobiles for geo-tagging at the same time?**

Ans: Yes, you can do it. But ensure you are not geotagging the same asset with both mobiles.

20. What to do if I get the alert 'Location not enabled'?

Ans: User need to ensure that location in Android setting is switched on, remove the mobile App if it is running in background and restart the mobile App.

21. What happens if there is a communication failure while uploading the data?

An: The mobile App shows the message 'Geotagged information has been uploaded successfully' only after receiving response from Bhuvan Server. If there is any communication failure, the data gets automatically organized in 'Sync/Manage' option and the user can upload it again.

22. Can I change the details of asset from mobile application?

Ans: Yes, Some fields on the mobile App may be edited/ modified when the asset geo-tags are saved and viewed under the "send later" option. The editable fields are "Status of Activity" and the "Details" which may be modified.

23. Who can moderate the geo-tags?

Ans: Concerned DDM's can do the moderation after logging into the geoportal.

24. How is the geotagged assets get validated / moderated?

Ans: A geo-tagged asset can be moderated by the concerned DDM by logging into https://bhuvan-app1.nrsc.gov.in/nabard/ under the Data Provider option. To perform moderation operation click on 'Enable Moderation' icon. Select any asset by clicking on it. After selecting the asset a pop up will display the information of geotagged assets along with the photos. From here the asset can be accepted or rejected or modified/updated.

25. What should the DDM do when the Asset information or the photographs are not correct?

Ans: DDM may view the Photos and information for quality and reject the asset geotag if not found satisfactory.

26. What is meant by 'Rejection of an Asset'?

Ans: If the asset details captured by the PFA/ Field personnel are wrong, then the DDM should reject the asset. Such rejected assets need to be geotagged again.

27. How to reject the geo tagged asset?

Ans: The geo-tag details of an asset captured by PFA can be moderated by respective DDM by logging into the Bhuvan portal https://bhuvan-app1.nrsc.gov.in/nabard/ under the Data Provider module. To perform rejection operation click on 'Enable Moderation' icon under the "Field Data" option to moderate the assets. Select any asset by clicking on it. After selecting the asset, a pop up will display the information of geotagged assets along with the photos. To reject the geo-tagged Assets click on reject button on bottom of pop up. After clicking on reject button a new box will open asking 'Reason for reject'. Enter the reason for rejection and select the reject button, asset will be rejected successfully.

28. I am facing a few issues with the mobile App. With whom can I raise my doubts?

Ans: Any user may contact their respective DDM'S who in turn may report/ send such issues to the Project Team at NRSC.

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Annexure – I - List of activities for Climate Proofing Projects

KFW/IGWDPCP/WDFCP/KFW_RSC/Springshed_RSC/ WDFCP_RSC		
Sr. No.	**Activity**	**Sub-Activity**
1	Additional SWC Structures	Earthen Gully Plugs
2		Field Bund
3		Graded Bunding
4		Staggered Bunding
5		Bench Terracing
6		Stone Bund
7		Stone Gully Plug
8		Masonry Stone Outlet
9		Continuous Contour Trench
10		Contour Trenches
11		Brush Wood Dams
12		Check Weir
13		Earthen embankment with Spill Way
14		Gabion
15		Low Cost Water Retention Structure
16		Vegetative Barrier
17		Loose Boulders
18		Earthen Check Dam
19		Sunken Pond
20		Farm Pond
21		Nallah Bund
22		Percolation Tank
23		Cemented Check Dam
24		Well Recharge Pit
25		Farm pond with polythene lining
26		LDPE sheet lining for existing water body embankments
27		Recharge pits in drainage line
28		Masonry Check dam
29		Repair / Renovation of existing Earthen Water Harvesting Structure
30		Renovation of Multipurpose Trench
31		Soak Pit
32		Bori Bandh
33		Expansion of existing pipe water supply
34		Guard Wall

35		Canal improvement work to check the seepage water
36		Earthen Contour Bunds
37		Fodder Plantation for gully stabilization
38		Soak Pit with outlet
39		De-siltation of village ponds
40		Drainage Point Recharge Pit
41		Roof-top rain water harvesting
42		Rain Water Harvesting Model - Well
43		Revival of Defunct bore well
44		Bore well recharge pits/structures
45		Rain Water Harvesting Model - Pond
46		Well Deepening
47		Others
48	Soil improvement and Soil Productivity Enhancement	Soil testing
49		Issue of Soil Health Cards
50		Portable soil testing kit
51		Refilling of Portable soil testing kit
52		Application of nutrient for improved soil fertility
53		Liquid Manure Unit
54		Cattle urine collection unit
55		Azolla demo units
56		Green Manure Cultivation
57		Bio-fertilizer
58		NADEP compost
59		Vermi composting unit
60		Bio compost pit
61		Dry Mulching
62		Organic farming certification
63		One time deep ploughing in summer
64		Application of Gypsum & Paper Mill slag
65		Others
66	Promotion of Sustainable NRM, CCA Farming Practices and Food Security	Alternate varieties - demo
67		Alternate crops
68		Seed treatment
69		Intercropping
70		Crop rotation
71		Root/Tuber Crop Cultivation
72		Trellis Cultivation
73		Agro Forestry

74		Micro Irrigation
75		Green House Vegetable Demo
76		Ridge Furrow System
77		Integrated Nutrient Management
78		Integrated Pest Management
79		Organic farming demo
80		Relay Cropping
81		SRI Cultivation
82		Pheromone traps
83		Egg cards
84		Bio control agents
85		Enriched green fodder
86		Dry land Horticulture
87		Bio insecticide / Bio pesticide
88		Live Fencing
89		Solar Pump
90		Solar Pump with tube wells - demo
91		Crop diversification & horticulture.
92		Sustainable farming practices including organic farming
93		Zero Budget Natural Farming
94		Kitchen Garden/ Nutritional garden
95		Vegetable cultivation
96		Afforestation
97		Wind break plantation
98		Block plantation
99		Improved cultivation packages
100		Grass Seeding
101		Promoting drought/flood resilient varieties
102		Plantation on private land and common land
103		Bund Plantation
104		Silvi pasture plantation
105		Avenue Plantation
106		Development of Pastures
107		Development of fuelwood and energy plantations
108		Shelter belts
109		Branch cutting plantation
110		Green Fodder development
111		Tree Seeding
112		Ber Budding

113		Sprinkler Irrigation
114		HDPE Pipe to reduce water loss
115		Rain Gun
116		Zero Tillage
117		Poultry Shelter Unit
118		Goatry
119		Bee keeping
120		Dairy animals
121		Fruit plantation
122		Floriculture
123		Mushroom Cultivation
124		Annapoorna Model Demo
125		Rearing of improved local breed calves
126		Fishery
127		Others
128	Climate Change Risk Mitigation Measures	Agro Service Centre
129		Installation of Mini Agro-met observatory
130		Weather based Agro Advisory Services
131		Installation of Automatic Rainguage
132		Smokelesschulha
133		Silage making
134		Seed Village Program
135		Solar water lifting devices
136		Drinking Water tank for animals
137		Health and Treatment camp for livestock
138		Vaccination and Deworming camp
139		Improved cattle sheds
140		Farmer Producer Organization
141		Lifesaving irrigation systems
142		Coverage under Crop Insurance
143		Seed Bank
144		Fodder Bank
145		Seed/Grain Bank
146		Farmers Field school
147		Others
148	Capacity Building, Institutional Building and Knowledge Management	Audio Visual Tools - Short Film
149		Awareness and Mobilization Program
150		Community Sensitization Program
151		Awareness for Crop Insurance

152		Exposure Visits
153		SHG
154		SHG A/C keeping training
155		Animal Husbandry and Dairy Development Training
156		Awareness camp on Nutrition and Health
157		Nutritional security
158		Improvement of Soil quality and health.
159		Water budgeting and management
160		Financial Inclusion
161		PashuSakhi Training
162		FPO management
163		Skill-gap assessment
164		Non-Farm Sector
165		Convergence of State and Centrally Sponsored Schemes
166		Monthly Meetings of VWC
167		Experience sharing with Banks
168		Maintenance Fund Utilization
169		Half Yearly Social & Financial Audit of VWC
170		Goal Setting for post watershed
171		Leadership training
172		Maintenance of SWC works - Awareness creation
173		Training on fish farming
174		Entrepreneurship development
175		Wall Painting
176		Interactive Information Dissemination System
177		Village knowledge resource center
178		Awareness and Mobilization program
179		Exposure visits for peer learning
180		Market Linkage
181		Knowledge capturing and dissemination
182		Documentation of success stories
183		Others

Annexure – II - List of activities for WDF / IGWDP/WDF_RSC projects

	WDF / IGWDP/ WDF_RSC projects	
	Activity	**Subactivity**
1	Allied activities- Dairy	Crossbred Cows
2	Allied activities- Dairy	Mini-Dairy
3	Allied activities - Goateery	Stall fed
4	Allied activities - Poultry	Poultry
5	Allied activities - Sheepery	Stall fed
6	Innovative activities	Innovative Activities
7	LWD- Livelihood activities	Dairy Animals
8		Embroidery / Tailoring Activities
9		Exposure Visit
10		Flour Mill
11		Formation of SHGs
12		Goat / Sheep Rearing
13		Kirana / Cutlery
14		Others
15		Poultry
16		Revolving Fund Assistance
17		Training and Orientation Prog
18	NRM-Plantation and Horticulture	Afforestation
19		Agroforestry
20		Bund Plantation
21		Dryland Hoticulture
22		Floriculture
23		Vegetable cultivation
24	NRM-Soil conservation	Aadbandh
25		Area Treatment -Others
26		Bench Terracing
27		Brush Wood Dams
28		Check Weir
29		Chute Spill Way
30		Continuous Contour Trench
31		Contour Trenches
32		Drop Spill Way
33		Earthen Gully Plugs
34		Field Bund
35		Gabion
36		Graded Bunding
37		Grass Seeding
38		Loose boulders

39		Low Cost Water Retention Structure
40		Staggered Contour Trenches
41		Stone Bund
42		Stone Gully Plug
43		Stone Outlet
44		Stragged Bunding
45		Vegetative Barrier
46		Water Absorption Trenches
47	NRM-Water Resource Development	Cemented Check Dam
48		Drainage line treatment -Others
49		Earthen Check Dam
50		Farm Pond
51		Nallah Bund
52		Percolation Tank
53		Sunken Pond
54		well recharge pit
55	Other	Maintenance fund
56		Management Cost
57		Supervision Cost
58		Others
59	Productivity enhancement Measures	Drip irrigation
60		Integrated Farming Sysem
61		Inter cropping
62		Issue of soil health cards
63		Soil testing
64		Sprinkler irrigation
65		Vermicompost - Nursery
66	SDP-Training	Book keeping and accounting for VWCs
67		Covergence of state and centrally sponsored programmes
68		Credit intensification
69		Crop water budgeting, sprinkler/drip irrigation
70		Fianncial Inclusion, DBT, JAM, social security schemes
71		Formation fo FPOs
72		Formation of SHGs and JLGs, Farmers Clubs etc.
73		Improved agronomic practices
74		Integrated pest and Nutrient management
75		Leadership developemnt of FPOs

76		Organic farming
77		Soil health and soil health cards
78	Social Infrastructure Development	Drinking water-Water tanks
79		Education-Schools
80		Health -Biogas
81		Health -Hospitals
82		Housing-Kuccha house
83		Housing-Pucca house
84		Rural electrification-Solar lights
85		Rural electrification-Solar pumpsets
86		Sanitation-Construction of toilets