



MINISTRY OF NATIONAL FOOD SECURITY & RESEARCH

NATIONAL PROGRAM FOR ENHANCING THE COMMAND AREA IN BARANI AREAS OF PAKISTAN (NPECA) PROJECT CONSULTANTS FOR IMPLEMENTATION ASSISTANCE, EXECUTION SUPERVISION AND THIRD-PARTY VALIDATION

MONTHLY PROGRESS REPORT JULY-2023



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1 INTRODUCTION

Rain-fed agriculture has been playing an important role in providing food and livelihoods for an ever-increasing population. A vast number of the poorest farmers depend on direct rainfall to derive their precarious livelihoods in Pakistan. However, the scanty and more often erratic nature of rainfall distribution poses serious challenges to agricultural productivity and people's livelihoods. The water runoff losses from cultivated rain-fed areas are about 6 MAF. The cultivable land of 3.37 mha exists in rainfed areas that can be brought under sustainable agriculture. In the rainfed area of Pakistan, 772 small dams exist in all provinces, 619 in Baluchistan, 81 in Sindh, 58 in Punjab, and 14 in Khyber Pakhtunkhwa. The total potential command area of these small dams is 680,420 acres, out of which only 13.3 % are being irrigated and developed and 86.7 % are undeveloped. 2,997 mini dams also exist in Punjab and KP; 1853 in Punjab and 1,144 in Khyber Pakhtunkhwa. The total potential command area under mini dams is 48,613 acres, out of which about 25% command area has been developed. Hence the crop intensity and crop production in these command areas are extremely low. The main factor of low productivity includes less on-farm water storage capacity, low land/water productivity, unavailability of energy at the farm, underdeveloped command area of small/mini dams and other water reservoirs, huge culturable waste, unavailability of skilled manpower, less coordination between departments and fewer linkages between federal and provincial research and development departments.

The rain-fed areas need an integrated approach to promoting sustainable agriculture and improving livelihood. For instance, the development of mini dams should be coupled with the catchment and command area development of the watershed. Similarly, other interventions including watercourse/pipelining, soil erosion control structures/ diversion structures, on-farm water storage tanks, solar pumps, sprinkler/drip irrigation systems, and high-value crops need to be pursued simultaneously. The capacity building of stakeholders is also proposed to stimulate the adoption of appropriate technologies at national and local levels.

Soil, water, and energy conservation technologies are effective, but blunt, instruments for reducing rural poverty, and research is needed on the best means to reduce disparities among landowners and between landowners and other groups, without compromising productivity and wider poverty alleviation gains. The most appropriate measure for increasing the water productivity at the farm level would be to conserve the maximum of available runoff water generated by rains, wherever possible through the development of water storage ponds/ tanks or other such interventions and then using it for supplemental irrigation of water-sensitive crops. The climatic conditions, soils, and water resources in the project area provide enormous opportunities for growing high-value and cash crops like orchards (citrus, olive, grapes, stone fruits), vegetables (cucumber, capsicum, chilies, onion, tomato, potato, garlic, etc.), groundnut, pulses, mustard, sesame, etc. Therefore, enormous potential exists for the development of irrigated agriculture in barani (rainfed) areas through effective water resource development and efficient management.

2 DESCRIPTION OF THE PROJECT

The National Program for Enhancing Command Area in Barani Areas of Pakistan has a strong relationship with all the strategies and growth development of the Government of Pakistan. It is in line with the Medium-Term Development Framework (MTDF) of the Government of

Pakistan, which envisages efficient water conveyance and its application through rehabilitation/ improvement of farm-level water infrastructure and adoption of improved irrigation methods e.g., drip and sprinkler irrigation, etc. The Pakistan Growth Strategy envisages irrigation water management as one of the components for achieving the targeted agricultural growth, which would be achieved through water conservation at the farm level through the construction of water storage ponds, development of dug wells, improvement of watercourses in the command area of small dams/ mini dams of barani areas of Pakistan, installation of solar pumping systems at the farm pond, dug wells, and provision of LASER land levellers.

The project follows an integrated approach including the development of water sources (farm ponds and dug wells) for assured supply of irrigation water, construction of farm level water distribution network (watercourses) for irrigating crops, promotion of LASER land leveling services, solar pumping systems for irrigation, and the capacity building of stakeholders for promotion of irrigated agriculture in the rain-fed areas. The Project envisions promoting an environment-friendly, socially sustainable, resource-efficient, and economically profitable irrigated agriculture through integrated management of available soil and water resources by strengthening small landholder farmers. It would be achieved through increased water conveyance and application efficiency, adopting improved irrigation methods, use of solar energy for water lifting/ HEIS operation for promoting crop diversification, effective use of costly inputs, and capacity building of water users in the project area.

Table 1: Province / district wise details of Project

Sr. No.	Province	Districts
1.	Punjab	Attock, Chakwal, Jhelum, Rawalpindi, Dera Ghazi Khan, Layyah, Rajanpur, Khushab, Bhakkar, Mianwali, Gujrat, Sialkot, Narowal
2.	Balochistan	Quetta, Pishin, Killa Abdullah, Chagai, Nushki, Zhob, Bharkhan, Musa Khail, Killa Saifullah, Duki, Loralai, Sherani, Sibi, Harnai, Ziarat, Kohlu, Naseerabad, Jhal Magsi, Kalat, Surab, Mastung, Khuzdar, Awaran, Kharan, Washuk, Kech, Lasbela, Panjgur, Dera Bugti, Gawadar, Bolan
3.	Khyber Pakhtunkhwa	Karak, Kohat, Bannu, Hangu, Haripur, Peshawar, Nowshera, Charsadda, Swabi, Dir, Swat
4.	Azad Jammu Kashmir	Neelum, Muzaffarabad, Hatian, Bagh, Haveli, Poonch, Sudhnoti, Lotli, Mirpur, Bhimber
5.	Gilgit Baltistan	Gilgit, Skardu, Shigar, Kharmang, Diamer, Astore, Ghanche, Hunza, Nagar
6.	Islamabad Capital Territory	Islamabad

The component-wise details of the project are given as under.

- Construction and solarization of **2,664** farm ponds for storing and supply of rainwater from various sources.
- Installation of solar systems on **2,664** farm ponds for the operation of HEIS.
- Development of **4,106** dug wells for the development of water resources to promote irrigated agriculture.

- Installation of **4,156** solar pumping on dug wells for water development and HEIS operation (Inclusive of 50 hydro-ram pumps for GB component instead of solar pumping systems on dug wells);
- Development/ Improvement of **2,432** watercourses carrying water from various sources for enhancing water conveyance efficiency at the farm level;
- Provision of **1,106** Laser land Levellers to the farmers/ service providers for Laser land leveling services in the barani areas. In addition, conventional land leveling will also be done on **34,000** acres in Khyber Pakhtunkhwa.
- Provision of fruit plants, oilseeds/ pulses crops & fodder/ forage/ range on **45,502, 112,189, and 81,676** acres respectively, in the command area of small/mini dams to ensure irrigated agriculture.
- Establishment of demo-cum-training sites at five locations all over Pakistan and undertake need-based research activities when required.

3 MONTHLY PROGRESS (July 2023)

The progress of the month is mentioned below;

3.1 MEETINGS OF THE FIELD INSPECTION TEAM WITH THE DEPARTMENT OFFICIALS

The Field Engineers of all provinces have a meeting with different DDAs and DGs of the OFWM departments regarding the field visits and the rectifications of the deferred project sites. The main agenda of all meetings were; the discussion on Project Verification and deferred sites, and the discussion on the schedule for coming field visits. The main issue pertained to deviation from the designed costs and procedures as contained in Project PC-I. Concerned officials agreed to carry out the rectification at the earliest.

Below figures are showing the meetings held in different provinces during the month of July 2023.



Figure 1: Province; KPK District; Kohat





Figure 2: Province; Punjab District; Dera Ghazi Khan, Rawalpindi



Figure 3: Province; Baluchistan District; Loralai, Dukki



Figure 4: Province; AJK District; Muzaffarabad

3.2 MEETING OF NATIONAL PROJECT COORDINATOR AT PROVINCIAL OFFICE BALUCHISTAN

On 19th July 2023, the National Project Coordinator (NPC), FPMU conducted a comprehensive review of the project consultants' progress and the field activities at the Baluchistan, Peshawar. During this visit, the NPC meticulously examined the attendance records, office registers, and progress reports to assess the overall performance.

The discussion with the field office focused on several crucial aspects:

- Establishment of the Field Office: The NPC emphasized the importance of ensuring the proper establishment of the field office to facilitate effective project implementation.
- Coordination with DDAs and ADAs: The NPC highlighted the significance of seamless coordination between the consultant's staff and the relevant DDAs and ADAs.
- Non-availability of Staff Records and Office Facilities: Concerns were raised regarding the absence of complete staff records and the lack of essential office furniture and facilities.
- Provision of Motorbikes to Field Supervisors: The NPC discussed the allocation of motorbikes to field supervisors, recognizing their role in overseeing project activities and expediting progress in the field.
- Issues and Challenges Faced by Field Staff: The NPC took into consideration the issues and challenges faced by the field staff during project implementation.

In light of the discussion, the NPC issued clear directives to guarantee the provision of all necessary facilities and cooperation required for the smooth functioning of project activities

at the field office. The team leader addressed all the highlighted issues very keenly and necessary actions are being taken.



Figure 5: The NPC meeting at the provincial Office, Balochistan

3.3 PHYSICAL PROGRESS REPORT BY ALL PROVINCES

3.3.1 Punjab

A total of 97 sites were inspected during the month for the following interventions:

Table 2: Progress of Punjab Province during the month of July

Interventions	Reported by the Department	Checked by PC
Farm Ponds	3	3
Dug Wells Development	7	7
Solar Pumping System on Dug Wells	5	5
Solar Pumping System for Farm Ponds	0	0
Water Courses Development	45	45
Laser Land Leveller Units	37	37

3.3.1.1 A pictorial display of field visits to Punjab







Figure 6: Field Visit of Province Punjab

3.3.2 Balochistan

A total of 141 sites were inspected during the month for the following interventions:

Table 3: Progress of Balochistan Province during the month of July

Interventions	Reported by the Department	Checked by PC
Farm Ponds	31	31
Dug Wells Development	31	31
Solar Pumping System on Dug Wells	31	31
Solar Pumping System for Farm pond	26	26
Laser Land Levelers Units	0	0
Water Courses Development	16	16
Fruits/plants/Oil seeds/Pulses/Fodder/Forage/Range (Acres)	6	6

3.3.2.1 A pictorial display of field visits to Balochistan





Figure 7: Field Visit of Province Balochistan

3.3.3 Khyber Pakhtunkhwa

A total of 52 sites were inspected during the month in KPK. The intervention-wise details are given below:

Table 4: Progress of Khyber Pakhtunkhwa Province during the month of July

Interventions	Reported by the Department	Checked by PC
Water Courses Dev./Rehabilitation	65	9
Rough Land Levelling (Acres)	828	736.2

3.3.3.1 A pictorial display of field visits to khyber pakhtunkhwa







Figure 8: Field Visit of Province Khyber Pakhtunkhwa

3.3.4 Azad Jammu and Kashmir

A total of 43 sites were inspected during the month for the following interventions:

Table 5: Progress of Azad Jammu and Kashmir Province during the month of July

Interventions	Reported by the Department	Checked by PC
Farm Ponds	2	2
Dug Wells Development	13	13
Solar Pumping System on Dug Wells	11	11
Solar Pumping System for Farm Ponds	0	0
Water Courses Development	12	12
Laser Land Leveller Units	5	5

3.3.4.1 A pictorial display of field visits to Azad Jammu and Kashmir





Figure 9: Field Visits of Province Azad Jammu and Kashmir

3.3.5 Gilgit Baltistan

In GB, the Field Engineer held extensive meetings with the technical and supervisory staff of OFWM to finalize the procedures and file maintenance including the issuance of TS for all the civil works. The main issue of rectification of the deferred sites was also emphasized. OFWM staff indicated involvement in the budget issue and expressed an inability to get any field activities check temporarily.

All the Physical Progress Reports (Punjab, AJK, KPK, and Baluchistan) during the month of July 2023 have been attached in the annexures as **A, B, C, and D**.

3.4 IT BASED DEVELOPMENT

3.4.1 FRONT-END DEVELOPMENT OF THE ANDROID APP FOR DUG WELLS, FARM PONDS, AND SOLAR PUMPS(ICR-I AND ICR-II)

The front end of the Android App has been developed for collecting information regarding the Farm Ponds, Dug Wells, and Solar Pumps based on forms **ICR-I and ICR-II** on site as shown in **Figure 10**. The input fields provided in the app are as per the data forms developed for the same purpose (Data forms for Farm Ponds, Dug wells, and Solar Pumps are shown in **Figure 11**). The features of the Android app are discussed next in detail.

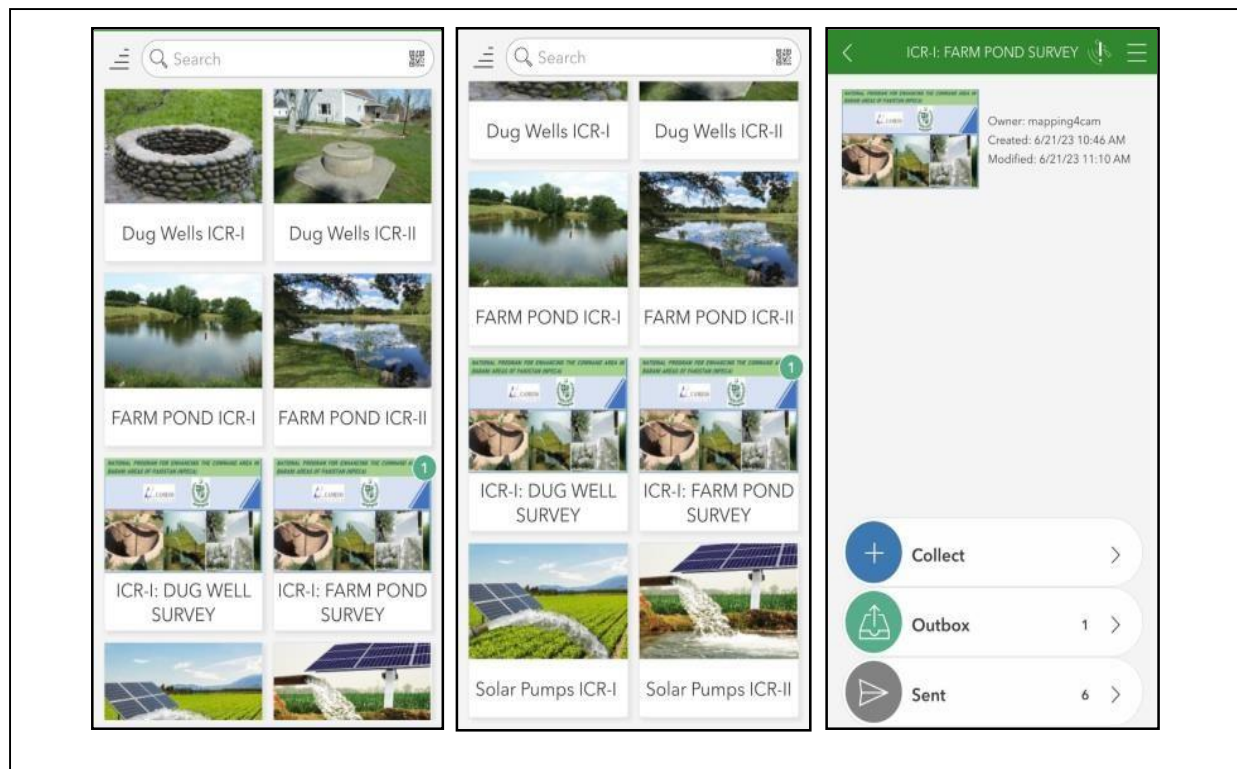


Figure 10:Interface of the front-end of the Android App

DATA ENTRY FORM			
Intervention:	SOLAR PUMP	Province	PUNJAB
Form:	ICR-I		BALUCHISTAN
Year of Construction			AJK/ICT
Date of Inspection			GB
Name of Beneficiary/Farm:			
CNIC Number		Scheme Area under PPIP (Acres)	
Village/Chak No.		Crop (s)	
Tehsil District		HEIS Work order date	
Mobile Number		HEIS Commissioning date	
GPS Coordinates		Solar system Work Order Date	
Name of SSC		Solar system Capacity (Kw)	
		ICR-I Completion Period (Days)	
Cost Break-up			
Total Scheme Cost (Rs.)	Government Share 60% (Rs.)	Farmer Share 40% (Rs.)	Bank Name & Chalan No & date
S.No.	Particulars	(Rs.)	% of total scheme cost
1	Cost of material verified		
2	Cost of material not supplied/not verified		
3	Amount to be paid as ICR-I: 50% of (total scheme cost)		

DATA ENTRY FORM			
Intervention:	SOLAR PUMP	Province	PUNJAB
Form:	ICR-II		BALUCHISTAN
Year of Construction			AJK/ICT
Date of Inspection			GB
Name of Beneficiary/Farm:			
CNIC Number		Scheme Area under PPIP (Acres)	
Village/Chak No.		Crop (s)	
Tehsil District		HEIS Work order date	
Mobile Number		HEIS Commissioning date	
GPS Coordinates		Solar system Work Order Date	
Name of SSC		Solar system Capacity (Kw)	
		ICR-II Completion Period (Days)	
Cost Break-up			
Sr.No.	Particulars	(Rs.)	% of total system cost
1	Amount already paid at ICR-I		
2	Amount to be paid as outstanding (If less than 40% of material cost recommended at ICR-I)		
3	Amount to be paid at ICR-II: 40% of total system cost + Amount to be paid as stated at S.No. 2, if any. (Installed equipment/ material verification report attached)		
4	Amount retained for warranty period (10% of total system cost)		
Total Project cost: (S.No. 1+3+4)			

Figure 11: Data Entry for the Solar Pump

3.4.2 COLLECTION OF INFORMATION:

- By clicking on the **Collect** Button, the Android App will open the input fields for data entry.
- All the input fields are user-friendly and the least effort will be required from the field engineer infilling the fields.
- All the calculations have been automated and the fields will be updated automatically once the required data fields are filled.
- A facility for taking pictures has been provided. Pictures can be taken directly on-site using the camera of the mobile phone as well as they can be uploaded from the mobile phone if needed.
- A facility for recording voice messages/notes have been provided in the Android app.
- A facility for automatic recording of the coordinates, using the GPS of the mobile has been provided.
- The snapshots of all the above-mentioned features for Farm Pond ICR-I is shown in **Figure 12**.

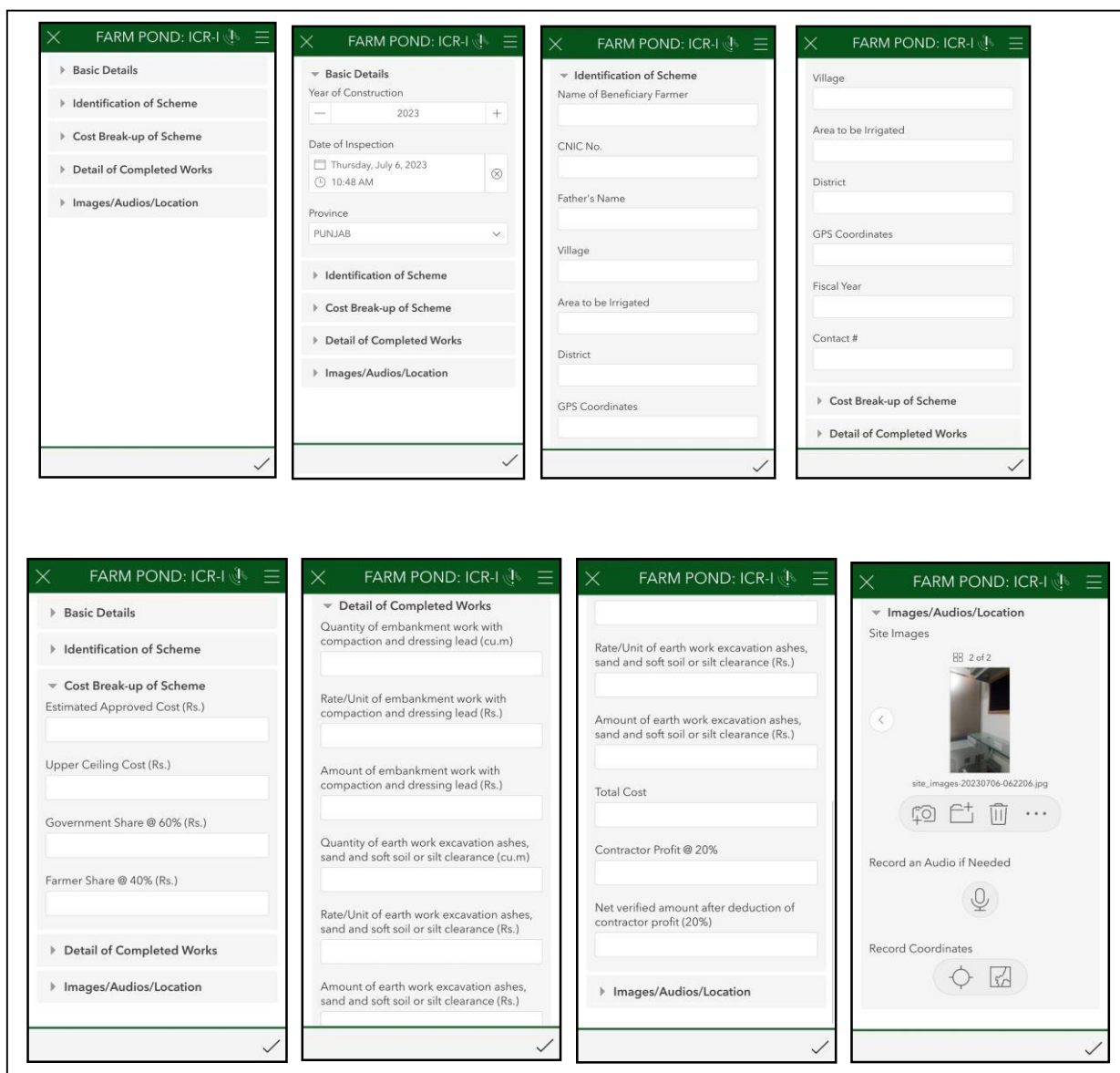


Figure 12: Snapshots of the entry fields, photo capturing, voice recording, and capturing GPS coordinates

3.4.3 SENDING / SAVING THE COLLECTED INFORMATION:

Once the data collection is completed the user is provided with options of storing it on the local device or sending it to the GIS database, depending on the availability of the internet as shown in **Figure 13**. The Send Now option is visible only when the mobile phone is connected to the internet otherwise only the Save in Outbox button will be visible to the user.

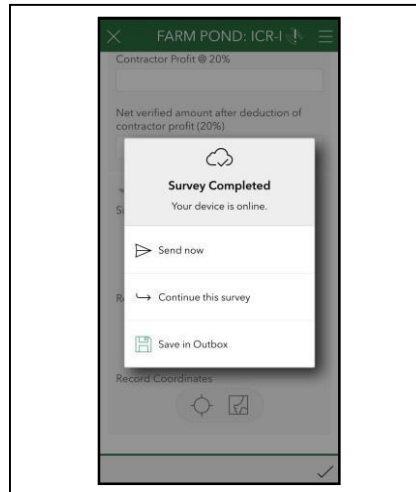


Figure 13: Snapshots of the sending/saving data feature of the Android App

The front end of the Android app has been successfully executed by developing its back end which has been connected to a temporary GIS platform. However, for real-time execution of the Android application, a **cloud server** is required to be **purchased** for storing all the collected information through the Android app.

3.4.4 DASHBOARD DEVELOPMENT:

A beta version of the dashboard has been developed for displaying the information collected through the Android application. The dashboard has been connected through the back-end programming with the Android app **for Farm Ponds, Dug Wells, and Solar Pumps (ICR-I and ICR-II)** and gets updated automatically once the survey is sent. The dashboard geotags all the collected information including photographs, voice recordings, etc. to its real-time location on the map. The information can be displayed in the form of a pop-up on the dashboard once the required survey location is clicked on the map. The full functionality of the dashboard is also subject to the purchase of the relevant cloud server which will serve as a database for the mobile application as well as the dashboard.

3.4.5 WEBSITE DEVELOPMENT:

The website has been updated with the dashboards of **Solar Systems and Water Courses**. A beta-version of the website is shown in **Figure 14**. The basic architecture of the website has been developed. The server will be purchased after taking consent from the relevant client representative. The website will be made available on the internet after incorporating any changes suggested by the client.

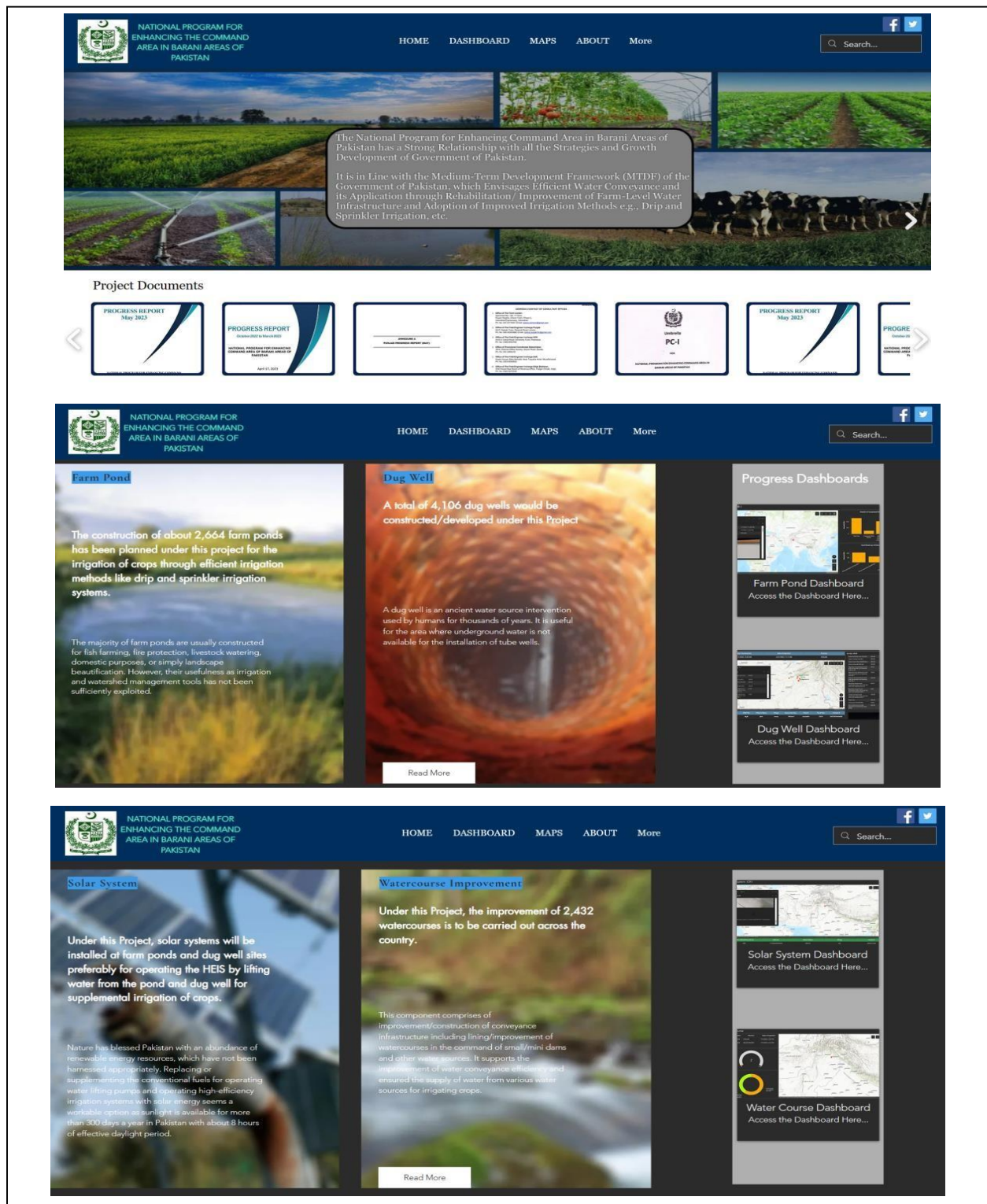


Figure 14: Beta Version of the Website