

Climate Change Impact on Dug-Well based livelihood in Soan River Basin

Questionnaire to develop Inventory & Database of Dug-Wells

1. Investigator Information:

Name:		
Designation:		
Age:	Sex: M/F	Date of the Survey: (D/M/Y)
Survey Phase No:	Survey Site No:	<u>Water Sample Code:</u>

2. Survey Location:

Village Name:	Ward No/U.C No	U.C Name:
Tehsil Name:	District Name:	
GPS Coordinate:	Latitude: E	Longitude: N
Address:		
Contact No:		

3. Respondent Profile:

(Encircle Code Accordingly)

Question #	Description	Option	Code
Q 1	Name Of the Respondent:		
Q 2	Age Of the Respondent: (Years)		
Q 3	What is the Sex of Respondent:	Male	1
		Female	2
Q 4	What is the Marital Status: (if code 1, then skip Q 5)	Single	1
		Married	2
		Widow	3
		Divorced	4
Q 5	If Married, then specify the Number of Children:	1 2 3 4 5 6	
Q 6	Relationship with the Head of Household:	Self	1
		Spouse	2
		Parent	3
		Son/Daughter	4
		Brother	5
		Other (specify)	

Q 7	What is the type of Family:	Nuclear	1
		Joint	2
Q 8	Qualification Of the Respondent:	Illiterate/Un-lettered	1
		Primary	2
		Middle	3
		Matriculation	4
		Intermediate	5
		Graduation	6
		Master	7
		Other (specify)	
Q 9	Occupation Of the Respondent:		
Q 10	What is the primary source of Income:	Agriculture	1
		Non-agriculture	2
		Both	3
Q 11	What is the total number of dependents?	1 2 3 4 5 6	

4. Dug-Well Related Information:

(Encircle Code Accordingly)

Question #	Description	Option	Code
Q	What is the type of Dug-Well: (If Code 1, then only select section 5) (If Code 2, then select both section 5 & 6)	Traditional Dug-Well	1
		Hybrid (Bore-hole Well)	2
		Both	3
		Other (specify)	

5. Traditional Dug-Well:

(Encircle Code Accordingly)

Question #	Description	Option	Code
Q 1	How many Dug-wells are there in your land?	One	1
		Two	2
		More (Specify)	
Q 2	Construction type of Traditional Dug-Well:	Kuchha (Mud made)	1
		Pucca (bricks/Stone)	2
Q 3	How many year ago, this dug-well was constructed: (Years)		
Q 4	What is the current status of Dug-Well: (If code 1, then skip Q5)	Operational	1
		Non-Operational	2
Q 5	If not operational, then mention the reason:	Non availability of water	1

		Lack of facility to pull water	2
		Maintenance required	3
		Other (specify)	
Q 6	Diameter Of the Dug-Well: (ft) (Inner / Outer)		
Q 7	Total Constructed Depth of the Well from the surface of the soil: (ft)		
Q 8	Existing/current (DW) depth to water surface from the top of well at the time of survey: (ft)		
Q 9	Minimum (DW _{min}) depth to water surface from the top of well: (ft)		
Q 10	Maximum (DW _{min}) depth to water surface from the top of well: (ft)		
Q 11	For which purpose this well water is being utilized:	Irrigation	1
		Drinking	2
		Both	3
Q 12	What is the quality of available water for Drinking Purposes?	Very Good	1
		Good	2
		Fair	3
		Poor	4
		Very Poor	5
Q 13	What is the quality of available water for Irrigation Purposes?	Very Good	1
		Good	2
		Fair	3
		Poor	4
		Very Poor	5
Q 14	What is/are other source(s) of Drinking Water:	Bore well	1
		Spring	2
		No other	3
		Other (specify)	
Q 15	What is/are other source(s) of Irrigation Water:	Bore-well	1
		Ponds/mini-dam	2
		River water	3
		No other	4

6. Hybrid (Bore-Hole) Wells:

(Encircle Code Accordingly)

Question #	Description	Option	Code
Q 1	Bore well exist inside or outside the well:	Inside	1
		Outside	2
Q 2	No of bores inside a Well.		
Q 3	How many year ago, this bore was made: (Years)		
Q 4	What is the current status of bore well: (If code 1, then skip Q4)	Operational	1
		Non-Operational	2
Q 5	If not operational, then mention the reason:	Non availability of water	1
		Lack of facility to pull water	2
		Maintenance required	3
		Other (specify)	
Q 6	Diameter Of the bore casing: (inch)		
Q 7	Diameter Of the outlet/delivery pipe: (inch)		
Q 8	Depth Of bore of well: (ft)		
Q 9	Water table existence at the time of bore: (ft)		
Q 10	For which purpose this bore-well water is being utilized:	Irrigation	1
		Drinking	2
		Both	3

7. Water Lifting system for dug-Well:

(Encircle Code Accordingly)

Q	What is the type of water lifting system used at dug-well to pump water? (If code 1, then select section 8) (If code 2, then select section 9) (If code 3, then select section 10) (If code 4, then select section 11)	Traditional Persian Wheel system	1
		Electric operated pump	2
		Diesel operated pump	3
		Solar operated pump	4
		Pulley system	5
		Other (specify)	

8. Traditional Persian Wheel water up-lifting System:

(Encircle Code Accordingly)

Q 1	What is the material used for Persian Wheel?	Wood	1
		Metal	2
Q 2	Total no of Persian Wheel on dug-Well:	One	1
		Two	2
Q 3	What is the current state of Machinery/Persian Wheel: (If code 1, then skip Q 4)	Functional	1
		Non-Functional	2
Q 4	If not functional, then mention the reason:	Old fashioned	1
		Need to repair	2
		Not efficient	3
		Not enough water	4
		Other (specify)	
Q 5	How do you operate this Persian Wheel system to lift water from the well?	Manually	1
		Through Donkeys	2
		Trough Bullocks	3
		Both (option 2 & 3)	4
		Other (specify)	
Q 6	How many bullocks/donkeys are required to operate this Dug-Well system?	One	1
		Two	2
		(If more, then specify)	
Q 7	For how long you have been using Persian Wheel to meet your Irrigation needs? (Years before)		
Q 8	Does this irrigation system meet your requirement?	Yes	1
		No	2

Q 9	What is the efficiency of this traditional Persian Wheel Irrigation System? a) Four code 1, better (1) b) Three code 1, Normal (2) c) Two code 1, poor (3) d) One code 1, very poor (4) e) No code 1, Non-operational (5)	Proper alignment	1
		Not proper alignment	2
		Bearings exist	1
		Bearings not exist	2
		Proper Catch cans	1
		Broken Catch cans	2
		Wheel lock exist	1
		Wheel lock not exit	2
Q 10	From how much depth (from top) can water be lifted using Persian Wheel? (ft)		
Q 11	What is the average discharge of water per rotation from well with Persian Wheel? (liters)	Size of catch cans (lit)	
		No. of Catch cans	
Q 12	How much time is required to empty this well during irrigation? (Discharge rate in hrs)		
Q 13	How many hours do you operate this system daily?	1	2 3 4 5 6
Q 14	How much level of water goes down after pumping water for above said hours in a day? (ft)		
Q 15	How much time is required for filling again at same level in the well after irrigation? (Current Recharge rate in hrs)		
Q 16	Do you observe the increase in the recharge rate during rainy season?	Yes	1
		No	2
Q 17	Do you feel that, now recharge rate has changed than the past few years:	Increase	1
		Decrease	2
		No change	3
Q 18	Is there any operational cost for this system? (if code 2, then skip Q 19)	Yes	1
		No	2
Q 19	If yes, mention the detail against each possible option: (Rs/-)	Animal capital cost	
		Food expenses of animal/month	
		Shelter cost/month	
		Machinery maintenance	

		(If more, then specify)	
Q 20	Is this system helping you sustain your livelihood? (if Yes, Explain in detail)	Yes	1
		No	2
Q 21	How can we help you in improving your system?		
Q 22	Do you feel embarrassment by using animals to derive Persian Wheel:	Yes	1
		No	2

9. Electric operated pump for water uplifting from Dug-Well:

(Encircle Code Accordingly)

Q 1	What is the current status of electric operated pump: (if code 1, then skip Q 2)	Functional	1
		Non-Functional	2
Q 2	If not functional, then mention the reason:	Old fashioned	1
		Need to repair	2
		Not efficient	3
		High operational cost	4
		Other (specify)	
Q 3	What is the pump power: a) Hp b) KW		
Q 4	What is the discharge of pump: a) LPS b) GPM		
Q 5	What is the outlet pipe size/delivery size: (inch)		
Q 6	Is this pumping system fulfill your irrigation & drinking requirement:	Yes	1
		No	2
Q 7	Is this system considered expensive to pull water from well:	Yes	1
		No	2
Q 8	What is the operational cost of the system: (Rs/month)		
Q 9	Do you need less expensive option for this activity:	Yes	1
		No	2

10. Diesel operated pump for water uplifting from Dug-Well:**(Encircle Code Accordingly)**

Q 1	What is the current status of diesel operated pump: (if code 1, then skip Q 2)	Functional	1
		Non-Functional	2
Q 2	If not functional, then mention the reason:	Old fashioned	1
		Need to repair	2
		Not efficient	3
		High operational cost	4
		Other (specify)	
Q 3	What is the pump power: c) Hp d) KW		
Q 4	What is the discharge of pump: c) LPS d) GPM		
Q 5	What is the outlet pipe size/delivery size: (inch)		
Q 6	Is this pumping system fulfill your irrigation & drinking requirement:	Yes	1
		No	2
Q 7	Is this system expensive to pull water from well:	Yes	1
		No	2
Q 8	What is the operational cost of the system: (Rs/month)		
Q 9	Do you need less expensive option for this activity:	Yes	1
		No	2

11. Solar operated pump for water uplifting from Dug-Well:**(Encircle Code Accordingly)**

Q 1	What is the current status of solar operated pump: (if code 1, then skip Q 2)	Functional	1
		Non-Functional	2
Q 2	If not functional, then mention the reason:	Need to repair	1
		Not efficient	2
		High operational cost	3
		Less power to operate pump	4
		Other (specify)	
Q 3	What is the pump power: e) Hp f) KW		
Q 4	What is the discharge of pump: e) LPS f) GPM		

Q 5	What is the total power of solar panels: a) Hp b) KW		
Q 6	What is the outlet pipe size/delivery size: (inch)		
Q 7	Is this pumping system fulfill your irrigation & drinking requirement:	Yes	1
		No	2
Q 8	Is this system expensive to pull water from well:	Yes	1
		No	2
Q 9	What is the operational cost of the system: (Rs/month)		

12. Agri. Land Holding & Agricultural activities:

(Encircle Code Accordingly)

Q 1	What is your household's status in agricultural landholding? (if code 1, then skip Q 2 & select Q 3)	Landowner	1
		Borrower/Tenants/Lease	2
Q 2	For how long you have been a tenant?	1-2 years	1
		2-5 years	2
		More than 5 years	3
Q 3	What is the size of your owned agricultural land? a) Acres b) Hectare c) Kanals		
Q 4	What is the status of your land piece?	Exit whole land side by side	1
		Exit in segregated portion/patches	2
Q 5	What is the size of your Dug-Well dependent land? a) Acres b) Hectare c) Kanals		
Q 6	What is the size of agricultural land which is available for farming? d) Acres e) Hectare f) Kanals		
Q 7	Have you leased out some land? (If code 2, then skip Q 8)	Yes	1
		No	2
Q 8	If yes, then how much of your land leased out? a) Acres b) Hectare c) Kanals		
Q 9	How much land can be irrigated by your system? a) Acres		

	b) Hectare c) Kanals		
Q 10	Have you left some land fallow? (if code 2, then skip Q 11,12)	Yes	1
		No	2
Q 11	If yes, how much of your land left fallow: d) Acres e) Hectare f) Kanals		
Q 12	What is the reason to leave your land fallow:	Not enough water for irrigation	1
		Non fertile land/soil conditions	2
		Uncultivable due to slop	3
		Labor shortage	4
		Other (specify)	
Q 13	What types of agricultural practices are being performed?	Traditional/Conventional	1
		High-Value/Advanced	2
Q 14	Mention the type of crops grown by the farmer normally: Kharif Crops:(Apr-Oct) Rabi Crops:(Nov-Apr)		
Q 15	Have you leveled the land for irrigation:	Yes	1
		No	2

13. Perception about Climate Change/ Weather Variability:

(Encircle Code Accordingly)

Question #	Description	Option	Code
Q 1	Do you agree that climate change is taking place?	Yes	1
		No	2
Q 2	If yes, how did you come to realize?	Personal observation	1
		Awareness campaigns	2
		Media	3
		Other	4
Q 3	Which sector is most affected by Climate Change?	Agriculture	1
		Water Management	2
		Human Health	3

Q 4	Is your dug-well dependent livelihood being affected by climate change?	Yes	1
		No	2
Q 5	Temperature patterns have changed compared to 10 years ago?	Yes	1
		No	2
Q 6	What is the current scenario of summer as compared to 10 years ago?	More hot	1
		Less hot	2
		No change	3
Q 7	What is the current scenario of winter as compared to 10 years ago?	More cold	1
		Less cold	2
		No change	3
Q 8	What is the current scenario of average rainfall as compared to 10 years ago?	Increased	1
		Decreased	2
		No change	3
Q 9	What is the current water availability in the dug well for crops and animals than 10 years ago?	Increased	1
		Decreased	2
		No change	3
Q 10	What is the current water availability in the nearby river or stream than 10 years ago?	Increased	1
		Decreased	2
		No change	3
Q 11	Crop growing seasons are changing over the years?	Yes	1
		No	2
Q 12	What is the current crop productivity than 10 years ago?	Increased due to CC	1
		Decreased due to CC	2
		No change due to CC	3
Q 13	How Climate Change is affecting your cultivation practices?	Affecting yield	1
		Affecting quality of crops	2
		Decreasing water supply	3
		Increasing water supply	4
		Others	5
Q 14	Do you think that climate smart technology interventions in your area can prevent you from being a severe victim to climate change related problems?	Yes	1
		No	2
Q 15	Have you noticed any change in quality of water obtained from your dug well in the face of changing climate? (If code 1, then select Q 16) (If code 2, then select Q 17)	Yes (+ve) Change	1
		Yes (-ve) Change	2
		No Change	3
Q 16	If yes (+ve) Change, then choose from one of the available options.	Suitable for agriculture	1
		Suitable for drinking	2

		Both	3
Q 17	If yes (-ve) Change, then choose from one of the available options.	Not Suit for agriculture Not Suit for drinking Both	1 2 3
Q 18	Have you noticed any change in quantity of water obtained from your dug well in the face of changing climate?	Yes (+ve) Change Yes (-ve) Change No Change	1 2 3
Q 19	Is the climate change effected your dug well's productivity?	Yes (+ve) Change Yes (-ve) Change No Change	1 2 3

14. House hold income:

(Encircle Code Accordingly)

Q 1	Mention the primary source and associated income of household? (Rs/month)	Agriculture Non-Agriculture Livestock Fisheries House-hold consumption Other	
Q 2	What is the total income? (PKR) a) Annual b) Monthly c) Seasonal		
Q 3	Was there an increase or decrease in the income from (SOURCE) in last five years?	Increase Decrease Fluctuating No change	1 2 3 4
Q 4	Is your income directly related/depends upon dug well's productivity?	Yes No	1 2

15. Adaptive Strategies by the farmer:

(Encircle Code Accordingly)

Q 1	What are your most critical challenges faced by using this traditional Animal Driven Persian Wheel Dug-Well for Irrigation:	
	• Quality Of Water of this Dug-Well	1
	• Yield of Water (less water to irrigate whole land)	2
	• Cost/expenditure of pumping water from well	3
	• Reluctance to use animal driven Persian Wheel on Dug-Well	4
	• Water fluctuation	5
	• Low Recharge rate	6

	<ul style="list-style-type: none"> Other (specify) 		
Q 2	Are you using some adaptive measures to overcome these challenges?	Yes	1
		No	2
Q 3	How many Dug-wells in your village:		
Q 4	How many Dug-wells in your UC:		
Q 5	If Yes; then how are you adapting to these challenges?		

The above mention all sections are completely filled.

Signature of investigator

Signature of Superintend

NOTE: Special remarks for future correspondence and other studies. (not mandatory for all respondents)	1. Influential Person for future correspondence if required (like FGDs for any study etc)	
	2. Well knowledge & up to date for issues/solution etc	
	3. Good communicator and respondent	
	4. High co-operation level during interview	
	5. Best fit for monitoring his well as according to the theme of this study	

---GOOD LUCK---