

Supplementary

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Questionnaire

University of KwaZulu-Natal

School of Agricultural, Earth and Environmental Sciences

Note: The information captured in this questionnaire is strictly confidential and will be used for research purposes by staff and students at the University of KwaZulu-Natal.

TOPIC: The governance-institutions nexus in water management for climate change adaptation in small-holder irrigation schemes in Zimbabwe

Date		Enumerator	
Household Code		Irrigation Scheme	
Village			

(Tick /circle correct answer where applicable)

A1: Socio-Demographic Characteristics

	Question	Response
a	Age of household head*	
b	Gender of household head	Male <input type="checkbox"/> Female <input type="checkbox"/>
c	Marital Status of household head	Single/Divorced/Widowed <input type="checkbox"/> Married <input type="checkbox"/>
d	Number of years the household head spent in formal education	
e	Main occupation of household head	Fulltime farmer <input type="checkbox"/> Other (specify below) <input type="checkbox"/>

<i>f</i>	Total number of household members		
<i>g</i>	Number of household members below 15 years		
<i>h</i>	Number of household members above 65 years		
<i>i</i>	Are there any children less than 18 years old living in your home because one or both parents are deceased/ not children of the family?	Yes	No
<i>j</i>	If yes in (7.i), how many are they?		
<i>k</i>	How many household members help with or involved in farming regularly?		

(*stays at home for 3 or more days per week.)

A2 Livelihood Strategies

	Question	Response			
<i>a</i>	How many people in your family go to a different community to work?				
<i>b</i>	Do you or someone else in your household raise livestock?				
<i>c</i>	Do you or someone else in your household grow crops?				
<i>d</i>	Do you or someone in your household collect something from the bush, forest, lakes and rivers for sale?				
<i>e</i>	If yes in (d), can you name what they collect				
<i>f</i>	Do you fetch expected prices after harvesting your crops?	Yes		No	

A3 Household Health

	Question	Response
<i>a</i>	How many hours does it take you to get to a health facility?	
<i>b</i>	Is anyone in your family chronically ill? (get sick very often)	

<i>c</i>	If yes in 2.i), how many?			
<i>d</i>	Has anyone in your family been so sick in the past 2 weeks that they had missed work or school?			
<i>f</i>	Did you reduce your expenditure on food during drought?	<i>Yes</i>		<i>No</i>

A4 Social Networks

	Question	Response		
<i>a</i>	In the past month, did your relatives or friends help you and your family?			
<i>b</i>	Did you or your family help relatives and friends in the past month?			
<i>c</i>	Did you borrow any money from relatives/friends in the past month?			
<i>d</i>	Did you or anyone in your family lend money to relatives/friends in the past month?			
<i>e</i>	In the past 12 months, have your family get assistance from government NGO/?			
<i>f</i>	Is any of your household a member of any organisation / cooperatives?	<i>Yes</i>		<i>No</i>
<i>g</i>	Do you own a TV and / or Radio in your home?	<i>Yes</i>		<i>No</i>
<i>h</i>	Do you discuss your farm related problems with other farmers or extension workers?	<i>Yes</i>		<i>No</i>

A5 Food

	Question	Response		
<i>a</i>	What are the main sources of your family food?	<i>Own farm</i>	<i>Working family member</i>	
		<i>relatives/friends</i>	<i>Remittances</i>	<i>relief</i>
		<i>Others (Specify)</i>		

<i>b</i>	Does your family always have adequate food for the whole year?	
<i>c</i>	If No in 2b), how many months a year that your family have trouble getting food?	
<i>d</i>	Does your family save some of the crops you harvest to eat during a different time of the year?	
<i>e</i>	Does your family save seeds to grow the next year?	
	How many hours does it take you to reach the market?	

A7 Natural Disasters and Climate Variability

Question		Response	
<i>a</i>	How many times has this place affected by drought between 2009 – 2019?		
<i>b</i>	Did you receive early warning about droughts before they occurred?		
<i>c</i>	Did anyone in your family die due to drought in the past 10 years?		
<i>d</i>	Is anyone in your family trained to deal with floods /drought/ cyclones?		
<i>e</i>	Did occurrence of drought increase in the last 10 years?	<i>Yes</i>	<i>No</i>
<i>f</i>	Do you think that drought will increase in the future?	<i>Yes</i>	<i>No</i>
<i>g</i>	Did you grow different crop varieties in the last 10 years	<i>Yes</i>	<i>No</i>
	What are the indicators of a changing climate in your region?	<i>Shortened rainy season</i>	
	<i>Long dry spells</i>	<i>Erratic rainfall</i>	<i>Late rainfall</i>
	<i>Shortened cold season</i>	<i>Others (Specify)</i>	
		<i>Increased frequency of droughts</i>	

A8 Farming Experience

Question	Response
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<i>a</i>	Number of years farmers have been into farming?	
<i>b</i>	Number of years farmers have been into irrigation farming?	

A9 Water Availability and Irrigation

1. May you please complete the table below on availability of irrigation water?

Question		Response			
<i>a</i>	How many hours do you take to get to water source?				
<i>b</i>	What is your position along the primary canal? _	<i>Head</i>		<i>Middle</i>	<i>Tail</i>
<i>c</i>	Is water discharged in time? [<i>1-Yes, 0-No</i>]				
<i>d</i>	On average how many days per week do you irrigate your crops? (<i>indicate number</i>)				
<i>f</i>	How do you know when your crops need to be irrigated?	<i>irrigate when it's my turn</i> __			
	<i>when the soil is dry</i>	<i>when crops are stressed</i>			
<i>g</i>	When was the problem of water shortage last experienced?	<i>it is currently there</i>			
	<i>a few days ago</i>	<i>a few weeks ago</i>	<i>-a few months ago.]</i>		
<i>h</i>	Do you think that there will be water scarcity in the coming years?	<i>Yes</i>		<i>No</i>	
<i>j</i>	Water quality has decreased over the past 10 years	<i>Yes</i>		<i>No</i>	

SECTION B: INFRASTRUCTURE

1. What is your level of satisfied with the state of the following infrastructure?

KEY: 1=Strongly dissatisfied 2=Dissatisfied 3=Neutral 4=Satisfied 5=Strongly satisfied

Infrastructure	State level of satisfaction
a. Road accessibility	
b. Markets	

c. Agricultural water supply	
d. Drinking water supply	
e. Others (specify)	

SECTION C: FARMING IMPLEMENTS

1. Do you own the following assets? (*Indicates number and value of assets owned,*).

Farm assets	1-Yes 0-No	Number of working assets	Their estimated value
Oxcart			
Ox-drawn plough			
Cultivator			
Hoes			
Knapsack Sprayer			
Wheelbarrow			
Others (Specify)			

SECTION D: LIVESTOCK OWNERSHIP

Livestock	1-Yes 0-No	Number owned
Cattle		
Goats		
Chicken		
Others		

SECTION E: LAND HOLDING AND UTILISATION

1. What is the total area of land your household owns/operates?

Type of farming	Ownership	Size of Land in Ha	Land fee paid per Year in ZAR	Size of cultivated land
Irrigation	Owned			
	Rented			
	Leased			
Dry land	Owned			

SECTION I: LAND TENURE

1. Are you satisfied with the tenure security of your plots? [1-Yes, 0-No]
2. Are you permitted to sell your plots? [1-Yes, 0-No]

SECTION K. SCHEME INSTITUTIONS

1. Please rank the following institution on their effectiveness on irrigation farming and state their roles.

Ranking Key: 1- Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 – Agree, 5 – Strongly Agree

Function Key: 1-water allocation, 2-Input/Output markets, 3-Extension services/training, 4-water allocation and distribution, 5-Maintenance of irrigation scheme, 6-Supply inputs, 7-legal, 8-water charging, 9-financial management 10-Others (Specify)

Institution	Rank
Traditional Leaders	
Cooperatives	
Private Organisation and NGOs	
Academic Institutions	
Irrigation Committee	

Community/fellow farmers	
Government agencies (Extension Officer)	

SECTION L. FARMERS' PARTICIPATION IN IRRIGATION WATER MANAGEMENT

- 1: Are there any irrigation committee in your area? [1-Yes, 0-No]
2. How much money do you contribute for scheme maintenance per year? _____
3. Are you aware of government initiatives and policies on irrigation schemes? [1-Yes, 0-No] __
4. Rank your participation (0-never, 1-sometimes, 2-always)

Institution	Rank
Attend irrigation meetings	
Electing/removing committee members	
Formulating scheme rules	
Irrigation Water scheduling	
Scheme maintenance	
Contribute finance	
Attending irrigation meetings	
Attending water related training	
Help other farmers to manage/conservate water	
Engage authorities regarding water issues in the area	

SECTION N. WATER AVAILABILITY AND IRRIGATION

Rank the following statements in relation to water access and availability

1- Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 – Agree, 5 – Strongly Agree

Questions	Rank
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		1	2	3	4	5
<i>a</i>	Water source reliable (never dries up)					
<i>b</i>	Water is sufficient for my cropping requirements					
<i>c</i>	I am satisfied with the maintenance of the canal					
<i>d</i>	Water distribution/sharing at farm level is fair					
<i>e</i>	Water supply to my plot is reliable					
<i>f</i>	Conflict resolution mechanisms are effective					
<i>g</i>	The penalty system for non-compliance is effective					
<i>h</i>	I often participate in infrastructure maintenance					
<i>i</i>	Availability of water has decreased over the last 10 years					

SECTION O. PEST AND DISEASE VULNERABILITY

	Which insects of your crops have increased in past 10 years?	Which crops are affected?
<i>a</i>	<i>Aphids</i>	
<i>b</i>	<i>Cutworms</i>	
<i>c</i>	<i>Armyworms</i>	
<i>d</i>	<i>Red spider mite</i>	
<i>e</i>	<i>Beetles</i>	
<i>f</i>	<i>Bollworms</i>	
<i>g</i>	<i>Whiteflies</i>	
<i>h</i>	<i>Termites</i>	

i	Others (Specify)	
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May you please complete this section on insect pests

a	If there is an increase in number of insect pests, what factors do you think have led to increased incidence of these insect pests?				
			<i>Shortened winters</i>	<i>Warmer temperatures</i>	
	<i>Increased dry spells</i>		<i>Insect pests resistance</i>		<i>Poor insect pest management</i>
	<i>Low rainfall</i>		<i>Others (Specify)</i>		
b	Which season of the year are these insect pests most prevalent?			<i>Summer</i>	<i>Autumn</i>
	<i>Winter</i>	<i>Spring</i>	<i>All Year round</i>		
c	How do you view the extent of crop losses from insect pest and disease attack?				
	<i>It is high</i>	<i>It is moderate</i>	<i>It is low</i>		
d	Which major strategy do you use to control insect pests?			<i>Insecticides</i>	<i>Biological</i>
	<i>Cultural</i>		<i>Integrated Insect Pest management</i>		
e	Are the chemical insecticides effective in the control of the insect pests?			<i>Yes</i>	<i>No</i>
f	If No, give reasons to your answer on question				
g	How frequent do you spray these chemical insecticides?			<i>Once/month</i>	<i>Twice /month</i>
	<i>Once /week</i>		<i>Twice /week</i>	<i>Other, (specify)</i>	
h	Did you change your spraying frequency from what you used to do last year?				
	<i>Yes increase</i>	<i>Yes, decrease</i>	<i>No</i>		

SECTION P: CROPPING AND MARKETING

1. Fill the table about the market you sell your main crop

Please indicate the crops you planted in the past summer season, the area you planted, the output you produced and the costs you incurred

Crop	area planted	Quantity harvested (kgs)	Quantity sold	Inputs used	Quantity purchased	Cost per unit
Summer 2019/20 season						
Winter 2020 season						