

**Manager questionnaire: Snowmelt dependent systems in The United States and Kenya**

This survey is being conducted by Indiana University, Princeton University, and the University of Nairobi, under the direction of Dr. Tom Evans in the Department of Geography at Indiana University (Email address: cipec@indiana.edu). The focus of this project is on the ability of farmers to adapt to changes in the availability of water in this area. Every precaution will be taken to maintain the complete confidentiality of your responses and personal information. If you choose to participate, you may refuse to answer certain questions, or you may stop participating at any time. Your decision whether or not to participate will not affect your current or future relations with the researchers, Indiana University, or local water associations. Your responses will be summed together with those of roughly 500 other households in Kenya and only general averages from the analysis will be reported. You will not be identified in any published results from this project. This survey should take approximately one hour to complete. Respondents will not receive payment for participating. You indicate your voluntary consent by participating in this interview. If you have questions about your rights as a research participant or have concerns about the study, you may contact the Indiana University Human Subjects Office at irb@iu.edu.

1. Province: . . . . . **PROV** . . . . .

2. District: . . . . . **DIST** . . . . .

3. Location: . . . . . **LOC** . . . . .

4. Sub-location: . . . . . **SLOC** . . . . .

5. Ranch: . . . . . **RNCH** . . . . .

6. Group ranch: . . . . . **GRNCH** . . . . .

7. Village/Locality: . . . . . **VILL** . . . . .

8. Community/scheme name . . . . **CSNM** . . . . .

9. Please list all of the languages that you speak . . . . **LANG**

10. Name of enumerator: . . . . . **ENUM** . . . . .

11. Date of interview . . . . . **DATE** . . . . . Day  Month  Year

12. Start and end time: . . . . . **STIME / ETIME** . . . . . Start time  End time

13. Name of supervisor: . . . . . **SUPER** . . . . .

14. Date supervisor checked . . . . . **SUPCH** . . . . . Day  Month  Year

15. Name of data entry staff . . . . . **DENTRY** . . . . .

16. Date of data entry . . . . . **DENTERED** . . . . . Day  Month  Year

**Section 1: Water user association attributes**

17. Roughly how old is your community/scheme? . **CSAGE**

18. How and why was this community/scheme established? **CSOEST**

19. Are there any published or written records about the history of your community/scheme? **RCRD**  
 Yes    No    No response

20. If yes, where are they available? **RCRDAV**

21. What is the current size of your community/scheme as measured in:

Members: **MSIZE**

Households: **HSIZE**

Acres: **ASIZE**

22. What proportion of people who could be connected to your community/scheme are not members? **NONMBR**  
 10%    20%    30%    40%    50%    60%    70%    80%    90%

23. Has the number of members in your community/scheme changed in the past 5 years? **CSCHG**  
 Greatly increased    Slightly increased    No change    Slightly decreased    Greatly decreased

24. Is there a great difference in wealth among households in your community/scheme? **WLTHV**  
 Large difference    Small difference    No difference

25. If there is a large difference, please describe this difference: **WLTHVEX**

**Section 2: Land and water assets**

26. Why did the members in your community/scheme start farming here? **WHYFM**

Farming here is more viable than farming or raising livestock elsewhere.

Government policies that encourage settlement in this area.

Other:

27. If the members in your community/scheme haven't farmed here their entire lives, are they better off now than when they were before they began farming here? **BTROFF**

Yes     No     No response

28. Please explain your answer to the previous question **BTROFFEX**

  


29. How has the total area of land your members cultivate changed in the last 5 years? **LNDCHNG**

Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased

30. If there has been a change, what is the main reason for this change? **LNDCHNGEX**

  


31. How did most of your members originally obtain their land? **LNDRGHT**

Purchased it     Inherited it     Rented it

Rights granted by:  Chief or local authority     Elders     Community     Neighbors

32. Have there been disputes over land use in your community/scheme in the past 5 years? **LNDCON**

Yes     No     No response

33. Please explain your answer to the previous question: **LNDCONEX**

  
  


34. What are the stream/river sources of water for your community/scheme? **RVRSRC**

**Section 3: Agricultural activities and energy use**

35. How has the amount of land your members irrigate changed in the last 5 years? **IRRCHNG**

- Greatly increased    Slightly increased    No change    Slightly decreased    Greatly decreased

36. If there has been a change, what is the main reason for this change? **IRRCHNGEX**

37. How much of the water that your members use for irrigation comes from rivers and streams? **RVRS**

- All    Most    Half    Little    None

38. How much of the water that your members use for irrigation comes from pipes? **PIPE**

- All    Most    Half    Little    None

39. How much of the water that your members use for irrigation comes from wells and boreholes? **PIPE**

- All    Most    Half    Little    None

40. How much do your members pay to join your community/scheme? . . . . **JOIN**

41. How much do they pay per month to be a member? . . . . . **NTWRKCST**

42. How much do your members pay per month to pump water to their fields? . **PPUMP**

43. During the following months of the past year, for how many days were your users without irrigation water?  
**WOUT**

	2011								2012				
	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Days with insufficient water													

44. How many times in the past have you attended meetings or workshops held by an agricultural extension officer?

. . . . . **EXTSN**

45. If you have met with an agricultural extension officer, how has this affected your activities? **EXTCHNG**

46. Do you know of anyone in this community/scheme with solar-powered lights, solar electricity, diesel generators, small-scale hydro power, or another type of energy production that is not connected to KPLC? **OFFGRID**

Yes     No     No response

47. If yes, is it common, or something only a few have in the community/scheme? **OFFGRDCOM**


48. If yes, do you know what they use these energy sources for? (light, business activity, entertainment, refrigeration, etc.) **OFFGRDUSE**


49. If yes, Do you know how they obtained the power generator? (e.g. available for sale in nearby town, went to capital to get, NGO brought, businesses brought, etc.) **PWROB**


50. Do you know of any businesses selling solar lights, panels, etc. in this community/scheme? **BSSOL**

Yes     No     No response

51. If yes, please describe. What about other types of electricity generation, like wind turbines, diesel generators, etc?

**BSTYPE**


52. Please describe the programs of any NGOs working in this community/scheme on electricity or energy issues.

**NGOENGY**


53. Has an NGO ever come to this community/scheme to promote distributed energy generation? **NGOVST**

Yes     No     No response

54. If yes, please describe. **NGOVSTEX**


**Section 4: Rules**

55. Describe the rules that govern membership in your community/scheme: **MBRRUL**


56. How is compliance with these rules monitored and enforced? **MBRMON**


57. Describe the rules that govern access to land in your community/scheme: **LNDRUL**


58. How is compliance with these rules monitored and enforced? **LNDMON**


59. Describe the rules that govern access to water from rivers and streams in your community/scheme: **RVRRUL**


60. How is compliance with these rules monitored and enforced? **RVRMON**


61. Describe the rules that govern access to water through pipes in your community/scheme: **PIPERUL**


62. How is compliance with these rules monitored and enforced? **PIPEMON**


63. In your community/scheme, are water rights tied to land rights? **WTRLAND**

- Water rights are tied to land rights     Water rights can be independent of land rights

Other:

64. Please mark whether water rights for users in your community/scheme are proportional to any of the following: **PROP**

- The amount of land users own  
 The amount of labor or financial contributions users are required to make  
 Not proportional to anything

Other:

65. Do water rights give users the right to use fixed amounts of water, or to take whatever is available for a certain period of time? **RIGHTFRM**

- Water rights are for fixed amounts of water  
 Water rights are for whatever is available for a certain period of time

Other:

66. Within your community/scheme, is water distributed by turns along a rotation, or to everyone at once in proportion to their rights? **ROTPROP**

- Rotational  
 Proportional

Other:

67. How are conflicts regarding water use resolved within your community/scheme? **CONRES**

68. Does an external organization play an important role in this conflict resolution process? **EXORG**

- Yes     No     No response

69. Does your community/scheme share any of the following water supplies with other communities/schemes?

**SHRWTR**

- Other associations use the same rivers and streams as we do
- Other associations use the same pipes as we do
- Other associations use the same reservoir or water storage tank as we do
- Other associations use the same wells and boreholes as we do

If this is the case, does your community/scheme have agreements with other communities/schemes about how you share water? **WTRAGR**

- Agreements exist for water from rivers
- Agreements exist for water from pipes
- Agreements exist for water from tanks
- Agreements exist for water from wells and boreholes

70. If there are agreements, how is this water shared amongst your community/scheme and other communities/schemes? **WTRAGREX**


71. Do these agreements involve changing water allocations in times of drought and water scarcity? **SCRCTY**

- Yes
- No
- No response

72. If yes, please describe: **SCRCTYEX**


73. If another community/scheme violates an agreement, what is the response of your community/scheme and others? **ASSOCRPS**


74. Does a government organization play an important role in the management of water within your community/scheme or nearby communities/schemes? **GVTROL**

- Yes
- No
- No response



75. If yes, please describe this role: **GVTROLEX**


76. Do the relevant external government organizations respect the authority of your community/scheme to determine and implement its own rules for water and land use? **EXREC**

Yes     No     No response

77. Please explain your answer to the previous question: **EXRECEX**


78. How would you describe the level of trust you and your members have in the government agencies that affect you? **EXTRUST**

No trust     Some trust     High trust

79. Have you ever gone to a court or government agency to establish or defend a water right? **CRT**

Yes     No     No response

80. If yes, were you successful? **CRTSCS**

Yes     No     No response

81. Have any changes in state/national water law affected your irrigation practices? **LAW**

Yes     No     No response

82. If so, how? **LAWEX**


### Section 6: Disturbances and adaptation

83. What are the five major problems and disturbances that your community/scheme is currently facing. Rank them from the most important to the least important.

1. **DISTR01**

2. **DISTR02**

3. **DISTR03**

4. **DISTR04**

5. **DISTR05**

- Droughts
- Floods
- Changes in agricultural commodity prices
- Changes in agricultural input prices
- Changes in food prices
- Changes in access to capital
- Political disturbances

84. Indicate if you agree or disagree with the following sentence: “Droughts are a major problem in my community/scheme”. Do you: **DRTS**

Strongly disagree    Disagree    Neither    Agree    Strongly agree

85. In the last 5 years, do you think that problems caused by droughts have: **DRTCHNG**

Greatly increased    Slightly increased    No change    Slightly decreased    Greatly decreased

86. During a drought does your community/scheme use different rules than in normal climatic conditions to govern access to or allocation of land, surface water, or groundwater? **DRTRUL**

Yes    No    No response

87. If yes, please explain how and in what context? **DRTRULEX**

88. In the past, did your community/scheme ever permanently change the rules that govern access to or allocation of land, surface water, or groundwater as a consequence of a drought? **DRTADPT**

Yes    No    No response

89. If yes, please explain how and in what context? **DRTADPTEX**

90. Indicate if you agree or disagree with the following sentence: "Floods are a major problem in my community/scheme". Do you: **FLD**

- Strongly disagree    Disagree    Neither    Agree    Strongly agree

91. In the last 5 years, do you think that problems caused by floods have: **FLDCHNG**

- Greatly increased    Slightly increased    No change    Slightly decreased    Greatly decreased

92. During a flood does your community/scheme use different rules than in normal climatic conditions to govern access to or allocation of land, surface water, or groundwater? **FLDRUL**

- Yes    No    No response

93. If yes, please explain how and in what context? **FLDRULEX**


94. In the past, did your community/scheme ever permanently change the rules that govern access to or allocation of land, surface water, or groundwater as a consequence of a flood? **FLDADPT**

- Yes    No    No response

95. If yes, please explain how and in what context? **FLDADPTEX**


96. Indicate if you agree or disagree with the following sentence: "Changes in the price of obtaining water are a major problem in my community/scheme". Do you: **WTRP**

- Strongly disagree    Disagree    Neither    Agree    Strongly agree

97. In the last 5 years, do you think that problems caused by changes in water prices have: **WTRPCHNG**

- Greatly increased    Slightly increased    No change    Slightly decreased    Greatly decreased

98. During a change in water prices, does your community/scheme use different rules or agricultural practices than in normal market conditions? **WTRPRUL**

- Yes    No    No response

99. If yes, please explain how and in what context? **WTRPRULEEX**


100. In the past, did your community/scheme ever permanently change its rules or agricultural practices as a consequence of a change in water prices? **WTRADPT**

Yes  No  No response

101. If yes, please explain how and in what context? **WTRADPTTEX**


102. Indicate if you agree or disagree with the following sentence: “Changes in the price of agricultural commodities are a major problem in my community/scheme”. Do you: **AGCOM**

Strongly disagree  Disagree  Neither  Agree  Strongly agree

103. In the last 5 years, do you think that problems caused by changes in agricultural commodity prices have: **AGCOMCHNG**

Greatly increased  Slightly increased  No change  Slightly decreased  Greatly decreased

104. During a change in agricultural commodity prices, does your community/scheme use different rules or agricultural practices than in normal market conditions? **AGCOMRUL**

Yes  No  No response

105. If yes, please explain how and in what context? **AGCOMRULEX**


106. In the past, did your community/scheme ever permanently change its rules or agricultural practices as a consequence of a change in agricultural commodity prices? **AGCOMADPT**

Yes  No  No response

107. If yes, please explain how and in what context? **AGCOMADPTTEX**


108. Indicate if you agree or disagree with the following sentence: “Changes in the price of agricultural inputs are a major problem in my community/scheme”. Do you: **AGIN**

Strongly disagree  Disagree  Neither  Agree  Strongly agree

109. In the last 5 years, do you think that problems caused by changes in agricultural input prices have:

**AGINCHNG**

- Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased

110. During a change in agricultural input prices, does your community/scheme use different rules or agricultural practices than in normal market conditions? **AGINRUL**

- Yes     No     No response

111. If yes, please explain how and in what context? **AGINRULEX**


112. In the past, did your community/scheme ever permanently change its rules or agricultural practices as a consequence of a change in agricultural input prices? **AGINADPT**

- Yes     No     No response

113. If yes, please explain how and in what context? **AGINADPTEX**


114. Indicate if you agree or disagree with the following sentence: “Changes in the price of food are a major problem in my community/scheme”. Do you: **FOOD**

- Strongly disagree     Disagree     Neither     Agree     Strongly agree

115. In the last 5 years, do you think that problems caused by changes in food prices have: **FOODCHNG**

- Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased

116. During a change in food prices, does your community/scheme use different rules or agricultural practices than in normal market conditions? **FOODRUL**

- Yes     No     No response

117. If yes, please explain how and in what context? **FOODRULEX**


118. In the past, did your community/scheme ever permanently change its rules or agricultural practices as a consequence of a change in food prices? **FOODADPT**

- Yes     No     No response

119. If yes, please explain how and in what context? **FOODADPTEX**


120. Indicate if you agree or disagree with the following sentence: “Changes in access to capital are a major problem in my community/scheme”. Do you: **CPTL**

- Strongly disagree  
  Disagree  
  Neither  
  Agree  
  Strongly agree

121. In the last 5 years, do you think that problems caused by changes in access to capital have: **CPTLCHNG**

- Greatly increased  
  Slightly increased  
  No change  
  Slightly decreased  
  Greatly decreased

122. During a change in access to capital, does your community/scheme use different rules or agricultural practices than in normal conditions? **CPTLRUL**

- Yes  
  No  
  No response

123. If yes, please explain how and in what context? **CPTLRULEX**


124. In the past, did your community/scheme ever permanently change its rules or agricultural practices as a consequence of a change in access to capital? **CPTLADPT**

- Yes  
  No  
  No response

125. If yes, please explain how and in what context? **CPTLADPTEX**


126. Indicate if you agree or disagree with the following sentence : “Political disturbances are a major problem in my community/scheme”. Do you: **POL**

- Strongly disagree  
  Disagree  
  Neither  
  Agree  
  Strongly agree

127. In the last 5 years, do you think that problems caused by political disturbances have: **POLCHNG**

- Greatly increased  
  Slightly increased  
  No change  
  Slightly decreased  
  Greatly decreased

128. During a political disturbance, does your community/scheme use different rules or agricultural practices than in normal conditions? **POLRUL**

Yes  No  No response

129. If yes, please explain how and in what context? **POLRULEX**


130. In the past, did your community/scheme ever permanently change its rules or agricultural practices as a consequence of a political disturbance? **POLADPT**

Yes  No  No response

131. If yes, please explain how and in what context? **POLADPTEX**


**Section 7: Trends**

132. In your experience, has there been a general change in the amount of water that is available to your community/scheme? **WTRTRND**

- Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased

133. If you perceive there to be a change in water availability, what do you think is the source of this change? **WTRTRNDSRC**


134. How much of a decrease in water availability could your community/scheme withstand before your users would not have enough water to meet their minimum needs? **WTRDEC**

- No decrease could be withstood
- A decrease of one tenth of the water we currently have available could be withstood
- A decrease of a quarter of the water we currently have available could be withstood
- A decrease of half of the water we currently have available could be withstood
- A decrease of more than half of the water we currently have available could be withstood

135. In the past 5 years, have you noticed a change in the extent to which the users in your community/scheme exchange agricultural goods and commodities? **GOODEXCH**

- Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased

136. In the past 5 years, have you noticed a change in the extent to which the users in your community/scheme exchange livestock? **LVSTEXCH**

- Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased

137. In the past 5 years, have you noticed a change in the extent to which the users in your community/scheme exchange capital? **CPTLEXCH**

- Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased

138. In the past 5 years, have you noticed a change in the extent to which the users in your community/scheme exchange water or land rights? **RIGHTEXCH**

- Greatly increased     Slightly increased     No change     Slightly decreased     Greatly decreased