

Field Guide

For Community-based Assessment of Vulnerabilities and Adaptive Capacities related to Water and Institutions in the Context of Climate Change, Elqui and South Saskatchewan River Basins

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Rationale: To assess the ways in which people are vulnerable to water resource issues, especially in the context to explore ways of dealing with the issues in the future in Canada (South Saskatchewan River Basin) and Chile (Valle del Elqui).

Context: The vulnerability assessment (vulnerabilities of societies to changing conditions) requires information from a variety of sources, including census, previous studies, historical documents, instrumental records, other secondary information sources, key informants, team colleagues, and people (stakeholders) associated with the society/community/pueblito of interest. This document summarizes elements of the information collection that is collected directly from stakeholders, ie. community-based vulnerability assessment.

1. Process

The interviewing process will follow the protocols and conventions of the area (community or pueblito) as identified by local experts (Canadian and/or Chilean colleagues as appropriate). Like all community/pueblito-based field work, it is necessary for the researchers to spend some time familiarizing themselves with the study site to become familiar with the various groups, the accepted conventions and processes for research in the area, selection of key institutions, and similar issues. In this case, it may be advantageous for the researcher(s) to be introduced to the community by a person who is both known and respected in the location. In addition, the familiarization time will allow the community to become accustomed to the researchers. It is recognized that some of this work will continue throughout the exercise, as much information may only become available as a rapport is built with the community.

Sample selection will aim to include all social and economic groupings in the community (as identified during the familiarization period), and will also capture interests beyond the settlement itself (e.g. temporary employment, seasonal workers currently absent, regional decision-makers and managers, including businesses/industries [agri-industry, mining, etc. - organizations and institutions]). The researchers will identify the community profile and select a cross-section appropriately.

The strategy for interviewing will involve letters of introduction (as per local protocol), and interviews (and focus groups or similar methods, as most appropriate in the case of the community/pueblito of concern) will attempt to be scheduled at times most appropriate for respondents (e.g. avoiding popular television times).

The research process will be guided by community-based methods and techniques used in ethnography, participatory appraisal and rapid rural appraisal. The nature of this research requires adaptability and judgment on the part of field researchers, though they will update the larger research team at periodic intervals to review data collected, preliminary interpretation, and the need to revise the checklist (Appendix 1).

2. Information Collected

The types of information collected during the community-based vulnerability assessment portion of the research are considered analogous to “questions” for interviews, but researchers will use semi-structured interviewing (SSI) methodology which relies on structuring the interview as a conversation which is carefully guided to address particular topics related to the research objectives.

There is no prescribed set of questions beyond a checklist of topics to be covered (see Appendix 1). The specific communication tools will be selected to suit the community/pueblito and the particular group or individual being interviewed (or focus group). This can include use of maps, diagrams or photos as a means of engaging respondents and acquiring accurate information.

This document illustrates some of the likely questions researchers will ask for the vulnerability assessment portion of the research as well as a suggested flow of the conversations (subject to revision as more insight is gained into the community). Thus, the questions should be viewed as illustrative rather than definitive. In most cases, the natural flow of the interview, as per SSI technique, will deviate significantly from the list, and interviewers will use this as a “checklist” rather than a questionnaire. At the end of the interview or focus group, the researcher will summarize the main insights gained to allow the interviewees or participants to confirm or clarify the findings/data (often called a reflective interview process).

Furthermore, many relevant questions may only become obvious as the interviewing process continues (and follow-up interviews may be conducted as necessary). Although researchers will have as complete a picture of the history, institutions, conflicts and similar as possible (using all appropriate sources, including colleagues from biophysical disciplines, historical records, current publications etc.), it is inevitable that new issues which had not been considered at the outset will be entered into the research checklist. The guiding principle of the research will be the rationale (as stated above, and in IACC documents).

3. Interviewing Plan for Community Members: General Guide

Purpose: for interviews with residents (not key informants), in order to characterize vulnerability of individuals/households.

[As noted earlier, vulnerability assessment involves the synthesis of all possible sources of information to characterize exposure-sensitivities and adaptive capacities for a particular community. Thus, vulnerability assessment includes the collection of information from secondary sources, interviews with experts/key informants, and interviews with community members. This guide addresses the latter category of interviews.]

This document outlines a very general approach for interviewing individual community members, and attached are checklist/question examples for specific contexts. The information below outlines the approach, and is not an exhaustive list of particular questions. Many questions become important to ask but cannot be anticipated – they follow from earlier responses. One of the strengths of this approach is that it allows for the identification and investigation of aspects of vulnerability that were not known or hypothesized at the outset. Thus, work using this approach requires a high degree of interviewer judgment and focus. A checklist as well as fall-back questions (in the teeth-pulling style interviews) are useful tools.

Part 1: General Information Questions / Setting the Stage

This part of the interview serves two purposes: it situates the person being interviewed in the larger picture with personal details (age, occupation, family and community status) which will allow for more appropriate questions later, and it aims to create a rapport, to allow the respondent to become comfortable.

For example:

1. *How old are you? Are you married? Who lives in your household? (children, other dependents, and their ages) Other relatives in the community?*
2. *What do you do for a living? (employment, including permanent/temporary) Other sources of income? (other family members earning money for household? Details?)*
3. *Are you a member of local organizations? Which ones? In what capacity?*

Part 2: Open-Ended Interviewing on Exposure-Sensitivities, Adaptive Strategies

The purpose of this part of the interview is to document, from the respondent's point of view, those conditions (ie. **exposure-sensitivities**) that are important to people, and why, and how those are dealt with (why, why not, how effective) (ie. **adaptive strategies**). This gives a basis for describing the vulnerabilities specifically considered relevant by these individuals, without bias or suggestion or prompting from the researcher. This is necessary in order to put climate change conditions, and the role of water and institutions,

in the context of other forces and influences. The operative word for Part 2 is probing, not prompting.

The aim here is to identify the conditions, stresses, changes or forces that are important to the respondent and his or her livelihood; in particular, we seek to note conditions that relate to our concepts of exposure-sensitivity and adaptive capacity. Based on insights from general questions about the respondent's life in the community (Part 1), he/she is asked (open-ended) about what factors/conditions/changes affect his/her life and what stresses affect his/her livelihood. While there are general questions, the interviewer strives to turn this into a conversation while following-up new topics as they arise. How, why, when etc. are key questions here – ideally, the respondent brings up new topics on his/her own, but this is not always the case. The interviewer is exploring, not giving possible answers. For example:

What affects your livelihood/life? [refer to Part 1 to make relevant for particular context] Your occupation? Your community? Are you facing any problems? What have you had to deal with over the years? What are they? Why are they a problem, when, in what way? What causes them? What have you had to deal with? [these sorts of questions address exposure-sensitivity] How do you/have you manage(d) them? How did that work? Why did you choose that way? Why not other ways? How effective has the way you manage been? Why? Do you have help? Have things changed over time? What happened, why, how was it handled? What else had an effect? [addressing adaptive strategies and capacity]

To illustrate the very general question, in the case of a farmer, the interviewer might ask:

- a) *What are the challenges/opportunities for your farming operation? (and then explore what comes up in detail) – how, when, why...*
- b) *What affects the decisions you make on the farm? How? Why?*
- c) *Is the farm providing a secure income? Has this changed over the past few years? What happened? Why? What influenced this? How? How did you deal with it? Why? How effective was this? Would you do it again? Why/why not?*

If water/institutions come up as issues in the open-ended portion, explore them – but do not prompt specific forces or adaptive strategies. In Part 2, we need to get the story in the respondents' own words, but not prompt.

For example, if the respondent says “water is a problem”, follow up with –

How is water a problem? [not enough of it] Why is that? Was it always so? What changed? What influences water availability? What does this mean for the way you farm? [lower yields for some crops] Which crops? What effect does that have on the farm overall [lower returns] How do you deal with this? [bank loan, off-farm job] Why this way? Is this effective?

In the above example, the interviewer asked, “how do you deal with this?” – it may be that the farmer is thinking of buying crop insurance, but if he does not bring it up, don’t prompt with “do you have crop insurance?” at this point – he may say “thinking about it” by default. We need to ensure that we understand why a challenge is a challenge, how it evolved, how it plays out, and what they do/want to do about it.

To address the future:

What main challenges do you anticipate for your livelihood in the future? Why these?

How would these affect you? What might be done about them?

If you look ahead five or ten years, how do you see your operation changing? Why?

How? Living conditions, livelihoods? How would these affect you? Why?

Part 3: Guided Interviewing

This portion of the interview provides a systematic basis for assessing exposure-sensitivity and adaptive capacity to ensure that all potential factors are covered in a rigorous and comparable manner. In the process, we necessarily prompt for expected conditions relevant to weather, climate, and institutions. The list of specific topics needs to be established by researchers to be as comprehensive as possible through careful pilot testing, and adjusted as necessary.

In this section, we follow the open-ended responses (Part 2) up with specific questions where we ask about each of the factors identified/hypothesized by the researcher (ie. address all of the bullets in the checklist). The interview is still a conversation, but we have a checklist of topics to cover (see Part 3 in the Appendix), and this may be amended based on what comes up in the open-ended section.

For example, in the open-ended portion, the farmer indicates that “lots of things changed in the farm”, and when probed noted nothing specific or only crop prices, and when asked how he managed changes the only adaptive response he listed was replacing livestock with cropping. Now, follow up with question to ensure that changes [from the checklist] in water, temperature, biophysical, economic and social environment are addressed, and that potential adaptive responses (water and financial management, institutions, social responses) are discussed. We already know the exposure-sensitivities and adaptive strategies the farmer considers particularly relevant from the open-ended portion of the interview, now ask these in light of labour, prices, environmental sustainability, water use (and other potentially relevant factors that we established when we built the comprehensive checklist) that were not addressed without prompting. Make sure we understand the role of water and institutions in addressing any changes.

For example, if water has not come up yet on its own, since it is on the checklist, introduce it:

How do you use water? [ensure that both household and farming water addressed; get respondent to explain where they get it, when they use it, for what] Where do you get your water? Do you have the water you need to do everything you’re currently doing? [if

no] Why not? [amend language to make relevant to situation – you already know what they're doing]? (if yes, enough: has that always been the case? If no, how did things change? Why did things change? [get detailed explanation of changes, with suitable follow-up]

For example, if “too little water” emerges as an exposure-sensitivity for a particular farmer, we might follow up in greater detail with:

What do you do in times of water shortage? Are there programs you can use? Changes in the farming strategy? Timing of water use? Use of other sources of income? [be observant – are there fog nets? Irrigation heads? If not mentioned in general discussion of moisture, ask about them. If irrigation does not come up on its own, ask them what they do, how this has changed, if they would do things differently if identified constraints were not in place]

Similarly, we need to prompt for other items on the checklist (too much water, timing, quality, contamination...). If one of these emerges as an issue, probe and prompt until we understand why and how it is an issue, how it is managed, using what strategies (and check these – are there financial implications, social considerations, institutions that are relevant here...)

If it hasn't been explained naturally by now, make sure we know: where they get their water (well, municipal, canal, river, reservoir?), and what arrangements they have (do they have water rights? How many? How long have they had these? How long have they had their well, municipal hookup, canal hookup? Cost? How does water delivery work? Is it consistent – are there times of the year when things change? How? If times of the year there is insufficient supply – get explanation – what happens, and what do they do in response/to anticipate?) is paying for water an issue? If yes – how does this affect their use? How have things changed over the years? Always we make sure that we get not just what they are doing now, but what they have done over the years – when a change comes up, we ensure that we understand ramification thereof. We need to be sure to understand: seasonal variation, year-to-year variation, and what is done about these.

For example:

At times when you haven't had enough water, what did you do? What were the consequences of these actions [amend language to real-life situation – “you told me you didn't have enough water last fall. What did you do?” – nothing – “what effect did this have on your farm” – “lower yields” – “in what crops? Did this affect your overall income? Will this loss of income affect this year's growing season?”] [use what you know of the operation already to ensure you are getting answers to all – ie. is it just irrigation water that is in short supply, or drinking water too? Did livestock handling change in addition to irrigation practices? Did all crops experience yield declines? If additional water was purchased, through what means?]

If it hasn't come up on its own: *has it ever happened that there is too much water? Too much rain/runoff? Why was it too much? How did this affect things? Then what happened? What did you do at the time, subsequently? Was this effective? Would you do it again?*

If weather conditions other than moisture availability come up at any time – great, we make sure that we understand what conditions may cause problems – e.g. very cold winter, too hot summer, high winds etc. and how they cause problems, what these problems mean for individuals and the community, and what people are doing about them. We refer to the checklist to ensure all categories of adaptation strategies are addressed.

It is important that all of the categories of items included in the checklist are systematically covered – the above examples were developed for water, but we must also probe for temperature, biophysical (flooding, mudslides) hazards, and economic and social stresses, and explore these fully in light of potential adaptive strategies. Like water, institutions are of particular interest in this project, and examples are provided below.

Institutions represent an item on the checklist. If they haven't come up on their own, ask specific questions to place the respondent's understanding of institutional roles/opportunities in managing current and future exposure-sensitivities?:

What role do community organizations play in managing your operation? (have list of relevant ones you know – some may have come up already in Part 2) What regional/national organizations have an impact? How? In what ways is it effective? In what ways does it not work well?

At this point, it is important to address the respondents' ideas or recommendations for addressing specific problems. Using the vulnerabilities that have already been noted, probe further:

You told me about problems related to What could be done to address these problems? What can you do? Your community? Various organizations? Your government? What else would need to be done? Why is it not done?

Since the IACC is focused on institutions, researchers need to compile a list of all potentially relevant institutions (to be included on the checklist in Part 3 of the Appendix) and ensure that their roles and relevance are checked with respondents. After the general questions on organizations, we ask about specific institutions (the order is important – institutions that are mentioned by the respondent first are generally considered more relevant to the problem).

For example:

What role does the water board play? Has it helped you in overcoming [specific problem]? How? What was the nature of support you received? Did it help with the

solution? Why/why not? In what way was it effective? Ineffective? Why? [repeat for other relevant institutions]

The above example is developed in the case of a farmer. Similarly, if **not farming**, aim to ask the same style of questions: get a clear picture of the nature of water use, both for personal and commercial purposes, of the individual, including history of use, history of shortage/abundance, current management/arrangements, management/arrangement in time of shortage/abundance, conditions in addition to water which may cause problems, role of institutions and support, assessment of capacity of institutions to provide support, etc.

Future Exposure-Sensitivities/Adaptive Strategies

The IACC Project is focused on climate change, water and institutions. Consequently, we focus on the interrelationship among these three issues in our consideration of future exposure-sensitivities and adaptive capacities. As above, we prompt for specific/anticipated changes that may not have come up in the open-ended questions, including repeating partial answers to follow up.

Climate

To understand the context of the larger climatic system, we first approach potential climate changes in a respondent-driven format:

What kind of climatic changes (don't prompt, but provide examples of less rain, more rain, decreased river flow, hotter, colder, windier if needed) would cause problems for you? How? What would you do about them? What kind of conditions would open up new opportunities? How would you take advantage of them? [where possible, reference previous answers – ie. if respondent earlier said, “what I'm doing now is ok, but if it gets any drier, I'll be in trouble – you will have already asked how, why but now fill in the blanks – financial trouble? Social implications? etc.]

Second, we use a scenario-driven approach (based on the work of climate scientists) to get the respondent's assessment of potential implications of specific (predicted) changes. We will need to develop a check-list of potential changes relevant for our study sites for Part 3 of the guide, and prompt these. For example, if a drier climate is one of the predictions on the checklist, we might ask:

If things were drier in this region, how would it affect you? What would you do about it? How much of a change in moisture can you cope with? Why? What else might be done?

We check other predicted changes (as per study-site-specific checklists) in a similar manner, and explore the (perceived) implications of these for community members including relationship to institutions.

Water

It is likely that water will come up on its own when discussing climate, however, we still ask about water specifically:

What kind of changes in water (quality, quantity, availability) would pose problems for you? Why? How? What are the implications for your livelihood? How would you manage these changes?

And, after an open-ended discussion, we once again refer to a checklist on potential water impacts in this region. For example, even if overall climate is not predicted to change very much in this region but hydrologists indicate significant expected decrease in base flow of the river due to upstream changes, we need to explore these:

If river flow decreased, how would this affect you? What would you do if there was less water in the river? Are the tools you currently have available sufficient to deal with long-term decreased river flow? How? Why? What other tools might help?

Institutions

We already know which institutions are currently relevant to respondents. However, we still need to explore potential future institutional dynamics. First, we give respondents a chance to anticipate:

Are there organizations/institutions that you think may be able to help in the future? How? Why? Do the organizations you currently use need to change if climate and water dynamics change? How? Are there institutions that currently don't exist here that would help?

Similarly, we can employ a scenario-driven approach if we have discovered potential institutional alternatives to the status quo (through key informant interviews, added to the checklist). For example, if the water allocation mechanism is currently under review, with a shift from prior appropriation to riparian rights, we might ask:

Currently, your access to water is guaranteed based on your history of use. How would you be affected if this changed to a system based on how much land you have next to the river? What implications would this have for your livelihoods? How would you adjust what you do?

Conclusion

We conclude the interview by giving respondents a chance to provide us with feedback and add anything else that they may feel is relevant”

Thank you for your help. As you can see, I'm particularly interested in water use, institutions, and climate. Is there anything else on this topic – or your livelihood in general – that I didn't ask you about that you would like me to know?

Thank you for helping me to understand how you work and live. Who in the community is in a similar situation to you? There are many different ways of living, what people/groups do you expect to have very different experiences? Can you suggest some people to talk to who would give me a good idea of the range of experiences?

4. Reporting Back

It is imperative that the researchers (or the research team) report back to the community/pueblito/groups soon after the visit. It must be remembered that any dissemination activities at the local scale should be in a format appropriate for the audience. Furthermore, researchers need to carefully consider the benefit of their work to the community. Ideally, this is clear at the outset of the work (see Results-based Management of the Advisory Committee). One way of contributing to communities/publitos may be to do a public presentation in conjunction with biophysical colleagues which not only summarizes the information and interpretations of researchers collected during the interviewing process but presents supplementary data (e.g. hydrology, climatic maps, and similar).

Appendix 1: Checklist for Community Member Interviews

Checklists need to be developed carefully for each particular context – specific bullets will depend on occupation of respondent and the community within which he/she lives. The categories here are to be seen as “top level”, with site-specific sub-bullets. The example here is for farmers, and the list will be adjusted for other occupations.

Part 1 (Situational/Setting the Stage)

- Name, age, occupation, sources of income, where live
- Family – who live with, ages, employment
- Occupation/Livelihood (e.g. for farmers: land farmed, owned, rented; crops/livestock raised, how long farming)
- Role in the community
- Membership and role in organizations/institutions

Part 2 (Open-ended, probing)

No specific list – there are broad questions (see interview plan) and the interviewer’s job is to probe exhaustively without suggesting specific directions to answers. Avoid questions that can be answered with a simple (dead-end) yes or no.

Part 3 (Systematic, prompting)

The researcher develops a list of potentially relevant exposure-sensitivities and adaptive strategies in this region, and ensures that all topics on the list are addressed in a systematic manner (much may have been addressed earlier, but ensure that explored fully)

For each point in the checklist, questions of why, how, in what way, when, was this effective... needs to be explored fully.

Exposure-Sensitivities

- Water: too much, too little, timing, quality (incl. potable water)/contamination
- Temperature: too hot, cold, variability, predictability
- Biophysical environment: hazards related to flooding, mudslides...
- Economic environment: markets, agribusinesses, unemployment
- Social: loss of kinship networks, psychological stress, health status...

Adaptive Strategies

- Water management: irrigation, canals, wells, crop changes, livestock changes
- Management of other conditions: planting cold/heat tolerant cultivars...
- Financial management: insurance, draw on reserves, off-farm income
- Institutions: role of specific institutions (local and regional/national) in managing exposures
- Social: kinship networks and local organizations

Consideration of Future Exposure-Sensitivities and Adaptive Strategies

It is important to refer to additional information here: external climate data (ie. what may happen in this region) and recommendations being considered by policy-makers. The researcher thus needs to refer to key informant interview results here to generate specific checklists of potential climate scenarios for study communities.

Checklist for Future Exposure-Sensitivities (to be developed by researchers)

1. Climate: to be developed for each study site in collaboration with climate scientists.
2. Water: to be developed for each study site in collaboration with hydrologists.
3. Institutions: to be developed for each study site in collaboration with local experts and other project members with expertise in this area.