PROTOCOL GUIDE FOR MAJOR RESEARCH QUESTIONS:
Empirical Research

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Forward

In Phase 3 of AHI, we are embarking on a process in which different research designs and data collection techniques will be used in order to: a) better capture actions involved in the development of new work approaches, b) conduct research on development processes, and c) better understand and work with social, policy and biophysical dimensions at “landscape” and farm system scales. These areas are new for most of us; therefore, the AHI regional team decided that a new or revised “protocol format” would be useful to assist site teams in further defining their research. In the section that follows, we are trying to lay out a systematic way for defining these new areas of research. It is meant to guide the site teams (and others) to expand upon their work plans and more thoroughly think through and write down the details of the research design.

The protocol format sections will look familiar, but the contents are expanded, compared to a plot trial format. We are drawing upon a prototype research design format that is used for social science. We are using and promoting the use of scientific methods and we are building from these to ensure quality research and sound findings. We are not only emphasizing the design itself, which is built up to try to answer a major or central (large) research question, but linking the design solidly to the justification, objectives, and to the outcomes (behaviour change usually occurring locally) and products (“messages or findings” for those beyond the immediate community) that are meant for a defined audience (e.g. NGO, other researchers, policy makers).

We envision two main types of research that will be used:
(i) **Empirical or formal research**, where the scientists are able to delineate a research design from the outset, and define a relatively fixed research methodology that is designed to match the specific question at hand.¹ Formal research questions are used not only for biophysical research, but also for social science², in which comparisons (and corresponding ‘replicates’) encompass people or groups of people representing distinctive social, cultural or political circumstances (i.e. different social categories, ethnic groups or livelihood systems).

(ii) A more flexible research framework, what we are calling **process or action research**³, where the research findings only emerge as approaches are tested and improved upon. Action research diverges a great deal from that usually used by biophysical scientists. In this work, we often lack “best practices” because we are working in an innovative

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¹ Often these are the “what” questions that are normally used by biophysical or social scientists – e.g. What are the major causes of “x”? What are the major types of “y” existing in the community?
² There are also types of social research that are not considered “scientific” at all. An example of this is *postmodern inquiry*. These studies often focus on how people manipulate purportedly ‘scientific’ knowledge / information to serve their own political ends. A modern-day example concerns how different For example, using global warming data by different actors: e.g. environmentalists focus on the proof offered by data, while industrialized country governments, who stand to lose economically by reducing global carbon emissions, may focus on the uncertainty of the data.
³ Often these are the “how” questions that are guiding the action research – e.g. How do we best do “x”?
area, or because socio-political contexts are dynamic and existing approaches may not be validated in the context in which we are working. We therefore must design “best bet” approaches based on theoretical knowledge, prior experience and common sense. These approaches must be tested to know whether they are effective in solving the problem they were designed to address, and pragmatic modifications introduced as needed.

**Where do the research questions come from?**
Although the process to identify research questions is evolving we have several principles that we are trying to apply:

1. We use an iterative process to synthesize research questions proposed by all sites at each major step of the work plan, identifying major themes that become the PRIMARY research questions and sub-themes that become components of each primary research question.
   a. The first round of research questions may arise from regional discussions and/or emerge through fieldwork in the sites.
   b. These questions are shared across sites – through the RRT who does some synthesis of them.
   c. This leads to the final selection of the PRIMARY research questions – and to decisions to allocate the work to either process/action or empirical type research domains.

2. That there is a relationship between the two types of research and they support each other and are iterative (see text box and Diagram 1).

3. There must be a clear link between site concerns and the regional dimension (see regional framework and steps).

4. As much as possible the site-regional research areas are collaboratively done: e.g. rigour in design is put in by the RRT so that data derived from sites will add value to site knowledge & experience, and so that it will add value for wider audiences. Site teams with RRT member(s’) input will carry out the research. Analysis and synthesis will occur at two levels: a) the site level, and be led by the site coordinator and core team, and b) at the regional level, as led by RRT member(s). Where site team members are not directly involved in regional syntheses, synthesis results will be shared back to the sites to empower community development and action research processes on the ground. Credit will be shared and acknowledged.

For Steps 2-4 of the watershed work (as defined in Moshi), these questions were generated from three basic sources: minutes of the *Regional Workshop for Operationalizing Phase 3* (see Table “Generic Steps for Phases I and II of Watershed Work”), from amalgamates site team plans, and from each site team’s preliminary exploration of the watershed (see Appendices I through III of *A Framework for Strengthening Site-Regional Research Linkages*).

This protocol format focuses on the type (i) – empirical research.

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Links between site and regional dimension research questions
1. In this iterative process we can imagine the following possible scenarios:
   - ✓ sites have different research questions with associated methods
   - ✓ sites have similar research questions but will be testing different methods
   - ✓ sites have similar research questions and methods
2. Implications of this for regional dimension are:
   - ✓ cross site synthesis can be carried out on common areas of inquiry where a
equivalent method or data collection is designed with input from the regional
research team (RRT)\(^1\)
   - ✓ cross site synthesis can be carried out on common areas of inquiry even
though sites did the work in different ways
   - ✓ regional questions can be generated and in this case should be more
generic and related to main analytical issues
   - ✓ regional questions can be generated that might require additional research
rigour and/or data collection (to be negotiated with site)

Diagram 1. Embedding Formal Research in an Action Research / Participatory
Development Process

Overview of the protocol outline and explanation of the main sections

I. Title

II. Principle investigators and collaborators
List the names and organizations involved and the roles and responsibilities of each.
III. Introduction and Justification
There are two aspects that must be mentioned for justifying a research question: (i) what is known from the literature or development practice; and (ii) issues that represent gaps in site team knowledge or that are fundamental to enabling social impact from our R&D activities (derived from or related to your experience on the ground). [Note: For the purpose of illustration in the example below these two aspects are denoted in *italics for literature / practice points* and normal font for gaps in knowledge related to the situation.]

III. Objectives
(a) Primary objective
(b) Specific objectives
The primary objective(s) is related to a PRIMARY (broad, more encompassing) research question that comes directly from the regional research framework (for this example, see the table “SITE-REGIONAL RESEARCH LINKAGES: Enabling Community-Based Watershed Management” in German, Stroud, Amede, Opondo & Mowo 2003). The specific objectives are directly related and are sub-objectives to the primary one, and are derived from sub-questions (under each primary question) that originate from the site level. While these were generated by the regional research team under this iteration, we will increasingly encourage site teams to identify objectives according to regional and site-specific objectives. This is important, as it encourages site teams to synthesize all activities under a single overarching vision, and to maintain clarity in where we are headed.

IV. Research questions/hypotheses
A PRIMARY research question is identified from the regional framework, from which this protocol was derived. Related sub-questions are then developed or picked from those that have been identified by site teams, to ensure that the PRIMARY research question is effectively answered (i.e. that various important dimensions of the primary question are answered). [For the example below, they are developed directly from empirical site-level questions in the regional research framework (watershed dimension).]

V. Desired outputs/products
One of the products will be a write-up of the results of this work for AHI, site team and NARI use. This write-up should include the following sections: title, authors, introduction, objectives, justification, methodology, results and implications/discussion. The results will be organized according to a narrative (paragraph form) to synthesize findings from each question, several tables that synthesize results (see “Analysis,” below), and where relevant, additional figures or syntheses of statistical analysis.

Other products should be envisioned for various actors. List the actor and envisioned product for each. For example, FARMERS/COMMUNITIES - translation of findings into presentations / materials for farmers’ use – so that it can influence their thinking, decision making, practices and processes itself. RESEARCH MANAGERS / DISTRICT PLANNERS - a briefing note that describes the findings and methods. SCIENTIFIC COMMUNITY – a power point presentation, workshop paper, or refereed journal article.
VI. Desired outcomes (changes)
Formal or empirical research (such as found in this example) will lead to changes in the minds of researchers only if not shared more broadly. Therefore, if we want to use our results to change actors we need to think of "who" and "how". This thinking should be linked to the product identification and production. List here the outcomes envisioned for each actor (expected changes), and provide the link with the products or other future actions.

By amalgamating the results across sites through a rigorous analysis, synthesis and publication of this information, a broader range of actors can be targeted; such as NGOs, other researchers, policy makers. This should be mentioned in this section – identifying the audiences.

Empirical results will only lead to changes in the knowledge and practices of local communities if these results are shared back to the community, and used for participatory planning (with direct contributions to further action). This is the way you can use the results of an empirical study in action research, by developing more informed development processes with communities. In the write up of the protocol, include this information – who will you try to reach with this information and how.

VII. Methodology
For each method or combination of methods, a clear justification is presented. The methods should be linked to each PRIMARY research question, which are in turn directly linked to the objectives. This is an important part of any good proposal, and will help us learn how to develop research methodologies knowledgeably and creatively. Methodology development is both an art and a science. It is possible to use well-known methods and apply them to answer the research question; it is also possible to invent new methods or to creatively combine existing methods to better achieve a desired outcome. Most likely a combination of methods and tools will be used/selected and tested. The combination may be unique and a result in itself. The methods will lead you to the data collection aspects. There will most likely be different types of data required – both qualitative and quantitative in nature. This is a valid, scientific process. Note also in the example below how empirical research questions in social science build upon systematic comparison to maximize the reliability of findings, using the same scientific principles as in the biophysical sciences.
SAMPLE PROTOCOL FOR EMPIRICAL RESEARCH – By Laura German

I. Title: Identifying Opportunities and Constraints for Collective Action in the Galessa Watershed

II. Dates to be implemented: January 2003 – April 2003

III. Investigators and collaborators: Specified on a case-by-case basis.

IV. Introduction & Justification

[Note: There are two aspects that must be mentioned for justifying a research question: (i) what is known from the literature or development practice; and (ii) issues that represent gaps in site team knowledge or that are fundamental to enabling social impact from our R&D activities derived from or related to your experience on the ground. (For the purpose of illustration in the example below these two aspects are denoted in *italics for literature / practice points* and normal font for gaps in knowledge related to the situation.)]

Collective action *is an inherently social process, even if aimed at solving biophysical problems*. As such, it is critical that it be rooted in a solid social foundation. This could mean many things, depending on the social, policy and historical context. One common "AHI principle" for the participatory watershed management approach that we are developing is to *build upon cohesive social units*. We found such units in our preliminary exploration of local institutions (*Hera* in Areka, *Idir* in Ginchi, etc.). However, we do not yet know how important these social units are to diverse social groupings (based on gender, wealth, age, place of residence, etc.). *It has become increasingly evident that local “communities” are not homogenous entities, are often defined geographically rather than according to social cohesion per se, and are comprised of social groups with sharply divergent social roles, personal interests and perceptions*. As such, it is necessary to validate these local institutions socially – to determine how different actors perceive and relate to these social units. The more important an institution is to a broad base of social actors or to the stakeholders involved in a watershed management issue, the more likely that it will be an effective means for coordinating and enabling collective action in NRM.

During our preliminary watershed exploration, several site teams discovered other forms of social capital that could be productively channelled toward community mobilization in NRM. Examples include influential leaders who play a role in community mobilization and conflict resolution (Ginchi), traditional collective action practices for NRM that could be validated scientifically and utilized as examples for new forms of collective action (Lushoto), traditional conflict resolution mechanisms (Ginchi), social practices to orchestrate cooperation in community projects (Lushoto, Areka) or cross-village cooperation (W. Kenya), and revolving credit schemes (all sites). These emerged due to the respective site team’s decision to ask more broad-ranging questions. As such, it is important to address some of these questions systematically across sites, to derive both site-specific lessons (i.e. the diversity of social ‘capital’ that might be harnessed for NRM activities) and regional lessons (i.e. the prevalence of diverse types of social capital-for-development across E. Africa).

*Finally, the linkages between natural resource management and national policies, and between collective action and local policy enforcement, are well known.* While several AHI
site teams asked questions about local by-laws under the exploration of “biophysical issues,” the Ethiopian site teams decided to explore these policy dimensions more explicitly by asking how policies at diverse levels (local, district/woreda, national) influence land use and natural resource management. While it may be difficult for farmers to comment on national policies, these can be documented through key informants who are more knowledgeable or who are older and have therefore lived through major political changes. Local by-laws, on the other hand, should be known by most farmers. Some key issues to explore are how by-laws are formulated (top-down, locally formulated or both), whether they are effectively implemented (Are they followed? If now, why?), and how they impact natural resource management and cooperation. It is also important to identify any policy bottlenecks hindering collective action. For example, in Kabale District (Uganda) farmers had said that locally formulated by-laws are difficult to enforce because it may involve “telling on your neighbors” or lead to favoritism by local leadership. They insisted that higher levels of authority would have to stand behind these by-laws for them to be effectively enforced. Yet when taking a case to higher authorities, a fee was charged at each level, discouraging people to enforce even agreed-upon norms. This could be considered a policy bottleneck to effective cooperation in natural resource management, because it limits people’s ability to effectively enforce agreed-upon norms.

Other bottlenecks might include the lack of social mechanisms to even out the cost of by-law implementation. For example, if there is a by-law ensuring that everyone implements soil and water conservation practices, and a single women with many young children (i.e. with limiting labor availability) bears a greater burden in doing so than the rest of the community, then failure to have any mutual support mechanisms may constitute a bottleneck to effective local policies. One question that could be posed to local residents is, “What are the strengths & limitations for local by-law enforcement?” (See Research Questions, below).

V. Objectives
[Note: The primary objective(s) is related to a major (large) research question that comes directly from the regional research framework (for this example, see watershed framework in annex). The specific objectives are directly related and are sub-objectives to the primary one, and are derived from the sub-questions under the major one that originate from the site level concerns.]

Primary Objective:
Identify key opportunities and constraints for enabling collective action in the watershed.

Specific Objectives:
- Identify existing forms of social capital (forms of organization, beliefs, practices) and policy mechanisms (by-laws, enforcement practices, collective decision-making) that may be creatively used to enable collective action in natural resource management.
- Identify social (conflict, animosity, non-compliance with norms/by-laws) and policy (enforcement problems) barriers to collective action that may be addressed to enable collective action.

VI. Research Questions
[Note: A MAIN research question is identified from the regional framework (see annex) which forms that basis of this protocol. Then related sub-research questions are developed (or are picked from those that have been identified from the sites) to ensure that the MAIN research question is effectively answered, addressing various important dimensions of the MAIN question. (watershed dimension – see annex).]
A. Local institutions / social units.
   - What are the local institutions in the watershed?
     For each one:
     - What is their history?
     - What are their objectives / activities / benefits?
     - What are their strengths & weaknesses?
     - How do they interact - do they tend to cooperate with other groups?
     - How are decisions made?
     Comparing each institution:
     - Which of these groups is most important to you?

B. Other forms of social capital:
   - Who are the influential individuals in the community?
   - Which are more effective in community mobilization?
   - Are there any mutual support practices (for poor, elderly, etc.)?
   - Are there any traditional practices or beliefs that influence(d) management of natural resources?

C. Policies:
   Local level –
   - Are there any conflicts resulting from current NRM practices? What are they?
   - How are they resolved? Is this effective?
   - Are there local rules or by-laws for NRM? What are they?
   - Are they followed? Why or why not?
   - At what levels are they enforced (local, district/woreda)?
   - What are the strengths & limitations of by-law enforcement?

   District & national –
   - Are there any district or national policies that influence land management & use of communal resources? What are they?
   - How do they influence NRM?

D. Application
   - How will the opportunities and constraints to collective action in Galessa Watershed be utilized in designing a participatory watershed management process?

VII. Desired outputs/products
[Note: One of the products will be a write up of the results of this work for AHI, site team and NARI use. This write-up should include the following sections: title, authors, introduction, objectives, justification, methodology, results and implications/discussion. The results will be organized according to a narrative (paragraph form) on findings from each question, and several tables that synthesize results (see “Analysis”, below).

Other products should be envisioned for various actors. List the actor and envisioned product for each. For example, FARMERS/COMMUNITIES - translation of findings into presentations / materials for farmers’ use – so that it can influence their thinking, decision making, practices and processes itself. RESEARCH MANAGERS / DISTRICT PLANNERS - a briefing note that describes the findings and methods. SCIENTIFIC COMMUNITY – power point presentation, workshop paper, refereed journal article.]
VIII. Desired outcomes (changes)

[Note: Formal or empirical research (such as found in this example) will lead to changes in the minds of researchers only if not shared more broadly. Therefore, if we want to use our results to change actors we need to think of “who” and “how”. This thinking should be linked to the product identification and production. List here the outcomes envisioned for each actor (expected changes), and provide the link with the products or other future actions.

By amalgamating the results across sites through a rigorous analysis, synthesis and publication of this information, a broader range of actors can be addressed, such as NGOs, other researchers, policy-makers. This should be mentioned in this section – identifying the audiences.

Empirical results will only lead to changes in the knowledge and practices of local communities if these results are shared back to the community, and used for participatory planning leading to further action. This is the way you can use the results of an empirical study in action research – process development with communities. In the write up of the protocol, include this information – who will you try to reach with this information and how.]

Site teams are aware of a broad range of social units, practices and beliefs that might be build upon when seeking to enable collective action for watershed management. They are also aware of the policy mechanisms and bottlenecks that will influence the success of new technologies and new approaches to cooperation in NRM. The possible importance or use of this information has been discussed among site team members, so that there is a shared understanding of its relevance to participatory planning. Site team members are more enabled as community facilitators, because they have a broad base of knowledge about the social and policy context in benchmark sites – particularly social resources and practices, and how these are utilized to work collectively, solve conflicts, make decisions and the like. Site teams have information in an organized format for both a) community feedback and b) regional sharing within AHI.

The regional research team has the information needed to compare aspects of the social and policy context in the Galessa watershed with other benchmark sites and to publish these comparisons, making significant contributions to the knowledge of R&D actors in the region.

Table 1. Summary of Outcomes & Products of Formal Research under Step 3 of Site Work Plans

<table>
<thead>
<tr>
<th>Actor</th>
<th>Outcomes</th>
<th>Products / Future Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researchers, Extension</td>
<td>- Site teams are aware of existing strengths of the community</td>
<td>- A field report summarizing all of the field findings, broken down by diverse social</td>
</tr>
<tr>
<td>Agents &amp; Facilitators</td>
<td>(organizational arrangements, coping mechanisms, practices), bottlenecks</td>
<td>categories (by gender, landscape position, level of influence, age &amp; wealth).</td>
</tr>
<tr>
<td></td>
<td>to collective action, and of how different actors prioritise watershed</td>
<td>- A simplified description of the patterns emerging from the data (How do different</td>
</tr>
<tr>
<td></td>
<td>issues.</td>
<td>groups prioritise biophysical issues? The level of influence of individuals? The social</td>
</tr>
<tr>
<td></td>
<td>- Site teams use the acquired</td>
<td>units?). In the form of simple narratives &amp; bar graphs for community feedback.</td>
</tr>
<tr>
<td></td>
<td>knowledge to facilitate a more equitable &amp; nuanced watershed planning</td>
<td>- At least one publishable paper summarizing the patterns &amp; their</td>
</tr>
<tr>
<td></td>
<td>process.</td>
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<tr>
<td>Farming communities</td>
<td>- Farmers and leaders are more aware of the issues facing their community, &amp; of how different actors view them.</td>
<td>- An action plan that uses an equitable means of prioritizing issues to be addressed &amp; proposing solutions.</td>
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<tr>
<td>Regional research team</td>
<td>- The regional research team has data from each site on the diverse biophysical issues, how these are prioritized by diverse actors, and the social &amp; policy dimensions of collective action (opportunities, constraints).</td>
<td>- Regional publication contrasting the priority issues to be addressed as defined by diverse social actors, existing social capital for addressing these issues, and social &amp; policy bottlenecks affecting collective action.</td>
</tr>
<tr>
<td>Regional R&amp;D Actors</td>
<td>- East African research &amp; development actors are made aware of the common watershed issues facing rural communities, and of existing bottlenecks to effective solutions.</td>
<td>- Improved targeting of R&amp;D interventions.</td>
</tr>
</tbody>
</table>

**IX. Methodology**

[Note: For each method or combination of methods, a clear justification is presented. The methods should be linked to the objectives and these are linked to the research questions. This is an important part of any good proposal, and will help us learn how to develop research methodologies knowledgeably and creatively. Methodology development is both an art and a science. It is possible to use well-known methods and apply them to answer the research question; it is also possible to invent new methods. Most likely a combination of methods and tools will be used/selected and tested. The combination may be unique and a result in itself. The methods will lead you to the data collection aspects. There will most likely be different types of data required – both qualitative and quantitative in nature. This is valid, scientific process. Note (in the example below) also how empirical research questions in social science build upon systematic comparison to maximize the reliability of findings, using the same scientific principles as in the biophysical sciences.]

**A. Focus Group Discussions on New Themes**

[Note: Given that site teams have already begun the watershed exploration, the methodology has been adjusted to reflect work already done by focusing on: a) gathering information on new questions that emerged through cross-site learning, and b) validation of the data acquired in step a) and in the one-day watershed exploration.]

We will begin by doing a rapid exploration of new dimensions of social and policy opportunities and constraints, similar to the one-day field exploration yet focusing on new questions (gaps in the above research questions). We will aim to interview a diverse range of actors (men, women, different communities, etc.), but will pool the responses. This will serve as our “aggregate view” of the community.

For some questions that are unlikely to change between interviewees (for example, the history and activities of the social units), this will constitute our final data. For those questions that are more likely to change between interviewees (i.e. Which social unit is most important to you? What are the strengths and weaknesses of each?), we will follow through with a formal sampling protocol of diverse actors’ perceptions (see below).
Note: Sites should consider focus on existing gaps, as identified in the cross-site workshop synthesis and outlined below:

- Social Units: All sites to carry out a few interviews to complement the social unit questions already asked (i.e. on site team knowledge gaps for question A., above).
- Social Practices: Ginchi, Areka and W. Kenya to carry out a day of interviews (similar to one-day exploration), trying to capture a broad range of views on new social questions ("Other Forms of Social Capital"). Lushoto to complement existing knowledge (i.e. preliminary exploration of influential leadership).
- Policy: Lushoto and W. Kenya to carry out a day of interviews (similar to one-day exploration), trying to capture broad range of views on the policy dimension; Areka and Ginchi to carry out a few interviews to complement the policy questions already asked.
- Biophysical Issues: Teams should focus on documenting the key biophysical issues by asking the question in several ways. It was clear from the regional comparison of the one-day watershed exploration that the way in which the question was asked had a direct impact on the issues identified. As such, triangulation of diverse questions will help to generate a more robust list of issues. The questions should focus, minimally, on the following dimensions: a) NRM issues that could benefit from collective action, b) existing NRM conflicts, c) trans-boundary effects (how practices of neighbors/neighboring communities influences livelihood), and d) problems associated with the management of communal resources (forests, water, etc.).

[Note: The preliminary exploration of new social, policy & biophysical dimensions can easily be combined in a one-day outing, provided a large group of researchers is present.]

B. Compilation of Biophysical Issues, Influential Individuals & Social Units by Village

It is likely that views on a) the priority biophysical issues, b) leadership, and c) the importance of diverse social units differ according to different social actors ("categories"). Therefore, we will compile the full list of biophysical issues, influential individuals and social units for each village, and subject these lists to a systematic ranking procedure with individuals from each social category.

C. Social Validation of Identified Biophysical & Social Issues

[Note 1: Social validation refers to understanding how diverse social actors differ in their perceptions and prioritisation of key issues. When deciding how to ‘sample’ interviewees to document these diverse viewpoints, is it important to ask two fundamental questions: “Who do we need to talk to so that we can be sure we have broadly-representative findings?” and “How will we manage the data so that these views are kept separate in the analysis?”]

We will systematically “sample” diverse social categories (by gender, class, age, etc.) and positions on the landscape (by village, given the nucleated settlement pattern in the watershed) by interviewing individuals representing each category. This is justified by the need to identify areas of intervention that are high priority to diverse social actors, to ensure that there is motivation for collective action. Individual interviews are targeted because they
will allow us to get the views of less outspoken individuals, to target interviewees on the basis of social criteria rather than their tendency to participate in meetings, etc. It is more difficult to document such diverse views in a large community forum (PAR) or group interview setting. We also do not feel that more efficient sampling procedures (i.e. maximum variation sampling) are likely to capture the nuance and variation on these social and policy themes – that it is more suited to the identification of stakeholders once biophysical issues have been prioritised.

We have decided to focus on those issues that are most likely to differ among individuals, and combine research themes (biophysical, social, policy) within each interview to make efficient use of time.

1. Biophysical Issues. We have discovered from our interviews with others that there are a number of biophysical issues requiring collective action or cooperation. These are: x, y, z (use data from preliminary exploration).
   - Did we miss any important ones? Are there any others you can think of?
   - Now we have a more complete list. Please prioritize these according to their level of importance (How important it is that they be solved?).

2. Social Units. We will research how different social groups rank different social units by: a) reading off all of the units already documented, b) asking whether the list is complete, and c) asking the interviewee to rank them in terms of how important they are to them as individuals. Then for each one, we will ask only those questions whose answers are likely to differ among social actors:
   - What are their strengths & weaknesses?

3. Other Forms of Social Capital. We will research how different groups rank the influential individuals in their community by: a) reading off the existing list of names, b) asking if there are any missing names, and c) asking them to rank each one according to their perceived ability to mobilize the community? (each interviewee will rank them with 1, 2, etc.)

4. Policy Issues. We will ask each individual to discuss qualitatively the local policy issues:
   - Are there any conflicts resulting from current NRM practices?
   - How are they resolved? Is this effective?

X. The Integration of Formal Research into an Ongoing Development Process

[Note: Formal research steps must be embedded into an ongoing development process on the ground, so that the research questions and outputs are clearly targeted to development impact, and so that the communities don’t lose interest as we take time to explore the watershed or other issues. This step is to get the site teams to think about these linkages, how the research findings will inform development-oriented actions on the ground, and

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4 An alternative method sometimes used by social scientists is to elicit a complete list from scratch from each interviewee (called “free listing”). The order in which each is spoken is seen as reflecting the relative importance of each entity in the mind of the interviewee, and is therefore used to “rank” them during analysis.
What activities must be done to keep the community’s interest as time is taken to develop systematic approaches to research and development.

i. How are local leaders/communities notified of the research objectives?

**Why?** As we enter watershed work, we are changing the way we do business. New people will be contacted beyond existing farmers and communities, new questions will be asked, and the amount of time we spend in each community will change. While we intend to take the results of the preliminary watershed exploration back to each village to share with them and reflect on the way forward, we think it is necessary to systematically inform all local leadership of our objectives from the outset. In existing communities, this will clarify expectations and help engage farmers in an evolving agenda. In new communities, this will initiate the rapport-building process, show respect for the leaders and communities, and help to avoid generating any suspicions about this change in researcher behaviour. In all communities, it may help to leverage support for AHI activities, keep people informed, and check whether the approach we are using is culturally acceptable (in terms of farmers’ time, traditional decision-making and communication strategies, etc.).

**How? Current AHI Communities.** We will go to the existing community and inform the local leadership and all AHI farmers of the new dimension of our work through a community meeting. We will inform them that in this new phase, we hoped to do several things: a) study the impact of technologies already tried in their community, including the degree to which they led to any economic or food security benefits, who is benefiting, and any barriers to uptake that might exist due to the characteristics of the farming systems or households, b) find efficient ways to take tested technologies to new farmers inside and outside the community, and c) look at new areas of intervention in our desire to help the communities solve new types of problems, such as those areas that require cooperation so that benefits of technology uptake or NRM can be fully realized (giving concrete examples from what we already know).

We will then divide into three groups and ask farmers questions that will help us look at all three dimensions: **Group 1** have technologies had any impact? What kind? Who has benefited? Not benefited? Why? Are there barriers to uptake that we should be aware of?, **Group 2** How are technologies shared within the community? Who are you most likely to share with? Given these answers, how might we design a strategy to get technologies to the maximum numbers of people with minimum researcher involvement? Would any local social institutions be successful in taking on this role? Which one(s), and why?, **Group 3** What are the existing forms of cooperation/collective action within the community? What other activities could benefit from collective action? Have any of the technologies tried led to conflicts with neighbors? Which ones? Why?

We will then come together again and ask the group to present their findings. We will then have an open discussion about whether these new approaches are worthwhile, and what they find most interesting or promising about them. Finally, we will clarify expectations – explaining that with increased coverage we will not have as in-depth an interaction with the community, so we’ll have to be strategic – trying to maximize impact with their assistance. We will explain that we want to get a general overview of local perspectives on these new topics, so we will need to go around the community following up on the technologies and finding out how different people feel about the need for community action on diverse topics.
Finally, we will encourage them to share any new ideas on how best to move forward and achieve our objectives.

**New Watershed Communities.** In new communities, we will work directly through the local leadership. We will enter the community, ask the name of the local leaders, and visit them first. We will explain the history of AHI, where we have worked, how we worked in Phase II, and how we would like to expand our reach within new communities. We will clarify expectations, saying that the ways of working may change because of the small size of the team, so we need to work together with the community and existing social groups to see how we can achieve things together despite this limitation. Then we will say that in order to begin, we generally spend some weeks talking to farmers to get an understanding of different concerns and priorities. We will ask the leader whether it is acceptable for him to inform people and the preliminary exploration to begin, or whether it is necessary to first call the community together to present our work and get the go-ahead from them.

ii. Who is Involved? How?

Given that partnerships are best built from the ground up, as a project begins, we will visit those government and non-governmental partners who have expressed a personal interest in technology dissemination or watershed management. We will present them our workplans for farm-level and watershed-level work, and see whether they have an institutional interest in joining in. If so, we will ask them how the partnership would have to be structured in order for them to feel owners of the process, how they envision their participation and roles, and at what stage(s) of the process they would like to be most involved. Clear roles and responsibilities will then be assigned. This will determine the degree to which they get involved in the preliminary watershed exploration work.

iii. Methods / Techniques. How are research approaches (formal vs. action research, group vs. individual interviews) combined to achieve the desired outcomes and outputs? (See Appendix 1 for description of alternative research approaches.)

The research combines several research approaches as a function of the specific objectives of each stage of the R&D process. The approaches and justifications follow:

- Step 1 - Action Research to Inform the Community (justification above). As a process or action research component, we will reflect after the fact on how this was done, and whether it was effective.
- Step 2a - Formal Research to Document Diverse Views on the Research Questions. (See above description of the research methodology.) This activity will be kept as short as possible by involving the entire site team on the ground in data collection. This is envisioned as a way to avoid prolonging the watershed exploration and exhausting the communities' patience with extractive data collection.
- Step 2b – While time is taken to explore the watershed, farmers from new villages will be taken on field trips to existing AHI communities to view the work done thus far. This is envisioned as a means to keep farmers' enthusiasm high as we carry out formal research. These individuals will be selected to maximize the geographical coverage, and gender, class & age diversity of the participants.
• Step 3 – Participatory Action Research to Share Formal Research Findings with the Community. Once we have finalized the formal research process (biophysical, social & policy dimensions), we will hold a community meeting. We will present the results back to the community, showing the level of consensus or variation in people’s perceptions. We will then discuss how to prioritise the biophysical issues we will collectively work on, using research findings (who prioritized what?) as a basis for this decision. Proposed strategies for addressing prioritized biophysical issues will be developed, brainstorming on how to build upon social and policy findings. Roles and responsibilities will be defined (researchers, community, other institutions who may be in a better place to make a difference).

• Step 4 – Formal Research to Identify Stakeholders and Go Deeper in our Exploration. In addition to other responsibilities we may be assigned by the community, we will next carry out a stakeholder analysis for each biophysical issue to be tackled. Maximum Variation Sampling will be used as a means to identify stakeholder views. This will be complemented with an empirical sampling approach if certain social categories are not represented in our findings.

• Step 5 – Formal Research to Go Deeper in our Exploration of Prioritised Biophysical Issues. We will use our original research questions to go deeper into our exploration of the prioritised issues, comparing perspectives of individuals representing identified stakeholder groups. These groups will also be queried as to the proposed approach (social platform, policy actions) to address the problem.

• Step 6 – Participatory Action Research to Share Findings and Discuss Way Forward. Stakeholder groups will be brought together, findings will be presented, and a way forward negotiated.

XI. Data Collection

We have decided to collect data in the following ways, in order to maximize the detail of what we document in notebooks while keeping the documentation process simple:

• Notes vs. Charts. For most questions, detailed notes will be taken in the field by organizing researchers in teams of two – one to interview, and one to document exactly what the farmer says. However, for some questions that require ranking, we will go to the field with simple charts in which the list of items (social categories, influential individuals, or traditional practices/beliefs) is listed in the left-hand column (with extra spaces to include new items that come out of each interview), and the ranking placed in the second column.

• When doing this free listing exercise, a full list of questions will first be elicited so we do not break the person’s train of thought and are sure to get as complete a list as possible. When only a few examples are mentioned, we will continue to probe by saying, “are there any other examples?” Finally, when the list appears to be complete, we will go deeper into each theme - asking the remaining questions but also probing deeper to be sure we fully understand each response.

• We will also organize the site team to maximize our efficiency. This will entail: a) combining topics according to the time taken to finalize each (combining social, policy & biophysical topics if it doesn’t take too much time and cause people to become distracted; otherwise dividing among two interview teams), b)
keeping a spreadsheet with the names of interviewees in the left-hand column, and all of the social categories to which they belong across the top (male/female, old/young, rich/poor, influential/marginalized, etc.), and c) dividing the team into groups of two and distributing ourselves across villages. This way, when analyzing the data, we may be able to use a single interview to compare perspectives across diverse social dimensions / categories (female, old and more wealthy, for example).

XII. Analysis

A. Social units:
   - A narrative description of each social unit, including their history, objectives / activities, strengths and weaknesses, decision-making processes, tendency or willingness to cooperate with other groups, and their relative importance to diverse social actors.
   - A table contrasting the diverse social units (left-hand column) according to the following variables (top row): objectives, membership (# of people, gender & age distribution of membership, & geographical coverage), strengths, challenges/weaknesses, inclusiveness (rules for membership), tendency to cooperate with others, and their importance to diverse social groups. These variables were selected according to their likely importance in organizing collective action for NRM; others that emerge as important in each site should also be added to the table.
   - A table contrasting the diverse social units (left-hand column) with their average rank by members of diverse social categories (top row) – by gender, age, wealth, place of residence, social status (position of social, political or religious influence) & any other categories of local cultural importance.

B. Other forms of social capital:
   - A narrative of the individuals identified as influential within the community, the nature of their influence, and their relative influence in community mobilization.
   - A table contrasting the identified individuals (left-hand column) with their average rank by members of diverse social categories (gender, age, wealth, place of residence, social status).
   - A narrative of the mutual support practices that support disadvantaged groups, including the conditions determining how they are helped and who helps them.
   - A narrative of the traditional practices and beliefs that influence or once influenced the management of natural resources, including a complete description, the purpose of the activity or practice, who was involved, whether they are still in use, and their usefulness as perceived by diverse social categories.
   - A table of the beliefs and practices (left-hand column) and their perceived importance by diverse social categories (top row).

C. & D. Policy:
   - A narrative of all types of natural resource conflict existing in the watershed, including how they are resolved.
- A narrative of the NRM domains (tree planting, water use, etc.) where norms or by-laws exist, the degree to which each is followed by diverse actors (Who complies? Who does not?), reasons for non-compliance, enforcement strategies at local and district levels, and the strengths and weaknesses of existing mechanisms for by-law enforcement.

- The table comparing each NRM domain (left-hand column) with the following variables/columns: policies governing their use (in the boxes: local / district / national / none), mechanisms for enforcement (local / district / national) with their level of effectiveness, degree of compliance (high / medium / low), and the nature of non-compliance (Who? Why?).

- A narrative of district and national policies, and the influence each one has on land management/NRM.

XIII. Implementation Plan
a. Activities
b. Timing
c. Who Does What with Whom? (organization of site team & partners)
Annex 1. A Description of Proposed Research Approaches

Table 1. Triangulation of Alternative Research Approaches

<table>
<thead>
<tr>
<th>Approach</th>
<th>Strengths &amp; Limitations</th>
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<tbody>
<tr>
<td>Empirical Sampling</td>
<td>Farmer perspectives are sampled according to any number of criteria, including location in the watershed, farm characteristics, gender, wealth, etc. <strong>Strengths:</strong> Researchers can easily trust the social validity of findings because the perspectives of individuals of diverse social categories or farm characteristics are systematically interviewed and contrasted. <strong>Weaknesses:</strong> It is time-consuming, and local empowerment is limited.</td>
</tr>
<tr>
<td>Maximum Variation Sampling</td>
<td>Farmers are asked their perspective on an issue (i.e. the most urgent needs for collective action), then asked to identify others who think most differently from them. This continues until perspectives begin to overlap and researchers have a clear understanding of diverse stakeholder groups. <strong>Strengths:</strong> Sampling is made more efficient; researchers do not presuppose which social categories are relevant (i.e. through a sampling protocol) but lets them emerge through inquiry. <strong>Weaknesses:</strong> There is some risk that important perspectives are overlooked, and local empowerment is limited.</td>
</tr>
<tr>
<td>Participatory Action Research (PAR)</td>
<td>Community identifies and prioritizes collectively through dialogue and good facilitation. <strong>Strengths:</strong> Empowers communities in creative problem-solving through collective dialogue. <strong>Limitations:</strong> More outspoken individuals often dominate the discussion, risking lack of representation in perspectives shared. Requires an understanding of these social dynamics and skill to facilitate equitable exchanges. The difficulty of disaggregating perspectives during large meetings makes the merits of combining this with a systematic sampling procedure clear.</td>
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Table 2. The Relative Merits of Group and Individual Interviews

<table>
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<tr>
<th>Objective</th>
<th>Group Interview</th>
<th>Individual Interview</th>
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<tr>
<td>Understanding the perspectives of diverse actors / stakeholders on an issue</td>
<td>Can facilitate documentation of diverse angles on an issue through dialogue, but needs focus group discussion (only women, for example) to know how views differ by social category</td>
<td>XXX This is the only approach allowing diverse views to be systematically compared.</td>
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<tr>
<td>Enhancing interviewees’ understanding of difficult questions</td>
<td>XXX This is facilitated by dialogue among those present.</td>
<td>X Clarification must be done by the researcher.</td>
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<tr>
<td>Keeping outspoken individuals from influencing the opinion or participation of others</td>
<td>XXX This is obviously more difficult with group interviews, but through effective facilitation this can be minimized.</td>
<td>XXX No such problem is encountered here; however rapport with the interviewee is needed to enable truthful responses.</td>
</tr>
</tbody>
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