

## **Interventions and Impacts:**

### *An Evaluation of Interventions and Impacts of Three Ecohealth Projects in Central and East Africa*

*Prepared for:*

IDRC  
Ecosystem Approaches to  
Human Health Program Initiative

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## **PART I: INTRODUCTION**

The primary objective of the Ecosystem Approach to Human Health Program Initiative is to conduct research focused on improving human health through more effective management of stressed ecosystems within which human beings live and work. The Program Initiative originally described the goal as follows:

*to improve human health by supporting transdisciplinary research on the structure and function of stressed ecosystems on which people depend for their lives and livelihoods and by applying this knowledge to the development of appropriate intervention strategies,*

and more specifically,

*to improve human health and well-being while simultaneously maintaining a healthy ecosystem based on ecosystem management rather than health intervention alone.*

(from the Ecohealth program “Prospectus”)

In practice, the Ecosystem approach can be understood in terms of four inter-related research activities:

1. to systematically describe the agro-ecosystem and natural world dynamics related to the focus of the research or, in other words, to “map” the ecosystem;
2. to systematically describe the social systems and their dynamics as they interact with the ecosystem and the research problematic;
3. to design “solutions” that will address the human health problems at the center of the research; and
4. to test those solutions through effective interventions carried out within the socio-ecological context of the study.

From these general objectives and processes, it becomes abundantly clear that the ecohealth approach is expected to produce tangible impacts and outcomes, both in terms of improved human health, and in terms of more effectively managed ecosystems. Whether or not, and to what extent this happens in any given research context often depends on the actions of a multiplicity of stakeholders, ranging from farmers, households and communities to regional, national and even international institutions, managers and policymakers.

As the Ecosystem Approach to Human Health Program Initiative enters its second four-year funding cycle (2002), much has already been learned about how to help funded research projects to effectively engage in the first two core research activities described above (namely mapping the socio-ecological context and problem dynamics related to the research questions).<sup>1</sup> The methodological pillars of the Ecosystem Approach, including transdisciplinarity, participation, and gender have presented both challenges and remarkable opportunities to many of the ecohealth initiative's funded research projects.

One of the key findings of a recent evaluation on core ecohealth methodological issues<sup>2</sup> was that it takes most research teams almost all of the first 2 – 3 year initial funding cycle to learn how to work effectively as a transdisciplinary team, and to develop an effective participatory component to their inquiry process. Indeed, simply mapping the socio-ecological dynamics related to the research problematic has proven to be a major challenge to many projects. That evaluation recommended that the Ecohealth Program Initiative needed to consider second phase funding, simply because a single 2 – 3 year funding phase does not allow enough time (in many cases) for research teams to move beyond the initial step of developing a systematic understanding of the socio-ecological dynamics related to the research problem, to the ultimate goal of the research, which is the development of solutions and their testing through viable interventions. It is now apparent that the long range intended outcomes and impacts of many ecohealth research projects are (often) not fully developed until sometime during the second funding phase, which usually occurs in year three or four of the life of the project. This seems to be particularly true related to the testing of interventions, which presents a serious logistical problem for research managers.

Development related research institutions and programs worldwide are increasingly being faced with demands from their funders and development implementers to show the (development related) impacts and outcomes of their work, often in timeframes that are simply too short to be able to provide tangible “results”. This is the

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<sup>1</sup> See “Transdisciplinarity and Participation: An Evaluation of Transdisciplinarity and Participatory aspects of the IDRC Ecosystem Approaches to Human Health Project Initiative” Final Report (February 2001) prepared by Michael Bopp, Ph.D., Four Worlds Centre for Development Learning.

<sup>2</sup> Ibid.

case across the entire C.G. system, and it is also true of research programs within IDRC, including ecohealth.

This requirement, as well as the need to learn how to more effectively assist funded research programs to orient their work toward the development of sustainable solutions tested through effective intervention strategies, prompted the Ecohealth Program Initiative to contract the Four Worlds Centre for Development Learning (Cochrane, Alberta) in May 2002 to conduct an evaluation of “interventions and impacts on human health of three centre-supported projects” (from the offer of consultancy contract, center file number 101090/100646 contract number 107179).

## **The Document**

This document is the final report of an evaluation process that involved the following steps and stages:

1. Initial meeting with the project coordinator, Jean Lebel at IDRC offices in Ottawa to discuss the background to the evaluation, and to refine the research questions.
  2. A review of all relevant documents including project proposals, progress reports and project review documents, as well as the six case studies prepared for the “Trandisciplinarity and Participation Review” completed in 2001.
  3. Field visits to three projects, in Uganda, Ethiopia and Kenya as follows:
    - Uganda:** “Sleeping sickness, poverty and natural resource management.” (100106);
    - Ethiopia:** “Enhanced human well-being through livestock/natural resource management”, East African Highlands (003494);
    - Kenya:** “Livestock and agro-ecosystems management for community-based integrated malaria control”, East Africa (100482)
- a. Each of the three selected projects were visited, and an initial meeting was held with key project team members. A copy of the initial evaluation research questions was shared as discussion began. (See page 5 and Appendix A).

Together with team members, a plan was made (given the 2 – 3 days available for each visit) for a series of meeting and a field trip to the project area).

- b. During field visits to the project area, every effort was made to meet and talk with key community representatives and local authorities representatives who had been involved with the project.
  - c. After all field visits, meetings and interviews had been completed, I met with team members to discuss findings and observations, and to provide (in some cases in writing) detailed feedback on various aspects of the work. In these sessions, the line between “evaluation” and “coaching” were intentionally blurred, for the expressed purpose of addressing the evaluation process to the current learning needs of the project.
4. Key informant interviews with selected individuals with general knowledge of the C.G. systems and the ecohealth approach.
  5. Preparation and submission of draft final report.
  6. Conference call with Ecohealth Project Initiative representatives to receive feedback on draft final report.
  7. Refinement and submission of final report.

## **Limitations**

The scope of this study was limited by the following factors:

1. a relatively small budget was available to carry out the study;
2. an opportunity arose to piggy-back the field study onto another project, namely the SIMA/IDRC sponsored “workshop on proposed development in ecosystem approaches to malaria prevention in eastern and southern Africa” held May 26 – 31, 2002 in Nairobi, which in turn influenced the selection of projects to be visited (all in the central and east Africa region);
3. the fact that all three selected projects are somewhat early-on in their project life to be evaluating them related to interventions and impacts and;

4. the fact that selected projects received relatively short notice about when the evaluation visit was to take place, (because of the decision to piggy-back the visits onto the SIMA workshop timetable) which meant that, in some cases, key research team members and partners were not always available to meet. These limitations notwithstanding, a great deal was in fact learned about the problem of developing interventions in the context of ecohealth research and about the nature of various kinds of impacts that can occur as a result of effectively conducted ecohealth research processes.

## **The Scope of the Study**

The focus of this study is an assessment of the interventions and impacts of three ecohealth projects in central and east Africa.

The purpose however, was not only to evaluate these three projects *per se*, but also to explore the issues and challenges related to designing solutions and testing them through effective interventions. As soon as an ecohealth research team engages stakeholders (at any level) in consultation about the research problematic, an intervention has been made, and very likely, there is already some impact. People's thinking is already beginning to focus on the problem in new ways, and very often institutional and community stakeholders are moved to take action, (typically) long before professional researchers are prepared to suggest anything.

The evaluation questions guiding this study (provided by the Centre) focused on the following areas:

1. the impact of the Ecosystem Approach on finding viable and sustainable solutions to human health problems that are rooted in the management of the ecosystem and its natural resources;
2. the influence of the Ecosystem Approach on professionals and on institutions working in related areas to the types of problems the approach is designed to address;
3. tools and methods developed or adopted by stakeholders as a result of the research process; and

4. the nature and impact of various interventions undertaken (or anticipated) by the three selected research projects reviewed for this study. All of these questions are aimed at demonstrating the impact of the Ecosystem Approach to Human Health Program Initiative. (See Appendix A for detailed questions).

A primary challenge inherent in these evaluation objectives was described earlier. In the case of most ecohealth research projects, it takes 2 – 3 years of activity for the researchers to learn how to function as a transdisciplinary team and to gain experience related to effectively engaging stakeholder groups (including community stakeholders) in participatory research processes. The initial product of this first phase of learning is usually a reasonably useful “map” of the socio-ecological context, and possibly some researcher-designed technical solutions to address the core research problems.

However, a technical solution, no matter how elegant, is not an intervention. It is an hypothesis. It still needs to be tested and refined in the real-world context of the research, and this can almost never be accomplished except in collaboration with intended beneficiaries and other stakeholders through processes that almost always require adjustment and refinement of the original technical solution.

Put simply, all three of the projects selected for review for this evaluation are too early on in their respective project cycles to reasonably expect matured intervention and impacts as described in their long range project objectives.

Does this mean that it was not possible to evaluate interventions and impacts of the ecohealth approach through the lens of these selected projects? On the contrary. This study will show that in order to understand what terms such as “intervention” and “impact” actually mean in the context of ecohealth research, *it is necessary to look carefully at the methodological process of projects as they are unfolding*. Simply examining the tangible “outcomes” and “results” of completed projects will actually tell us very little about how those results were obtained. Since one of the long range goals of the study is to learn more about how to help funded research projects to develop effective interventions and to obtain sustainable impacts, it was very useful and necessary to examine the “messy” parts of various research programs that are still very much “works in progress.”

In order to broaden the range of real-world examples, I will also occasionally draw on the six case studies done in 2001 for the methodological review.<sup>3</sup> This seems to me entirely justified in that the 2001 study (Transdisciplinarity and Participation) and this one are both centered on core methodological issues and challenges of the ecosystem approach. As well, two of the projects reviewed in 2001 (i.e. Ethiopia and Kenya), were revisited (with a very different focus) for this study.

As to the need of IDRC and the Ecohealth Program Initiative to demonstrate tangible impacts and outcomes of the ecohealth approach (to funders, decision makers and other stakeholders). This study will show:

1. that all of the projects reviewed (for both studies) are in fact having a great deal of measurable impact;
2. that the difficult and seemingly intractable sorts of development problems ecohealth research takes on can in fact be addressed and transformed;
3. that the process of change takes time (often five years or more), which exceeds the current timeline expectations and funding horizons of many development research funders;
4. that pathways leading to sustainable impacts (in terms of solving specific health and natural resource management problems) are being identified and demonstrated by ecohealth research, but that another stage of work is required beyond the initial research, to “scale-up” tested solutions into development strategies that effectively reach whole populations and bio-regions; and that
5. this “scaling-up” phase is not simply a development implementation task. It is a researchable problem that will need to be incorporated into the Ecosystem Approach if the long range objective of the approach are to be realized.

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<sup>3</sup> See footnote no. 1.

## **Organization of this Report**

- Part I            Introduction and Methodology
- Part II            Case Reviews
  - A.    Uganda
  - B.    Ethiopia
  - C.    Kenya
- Part III          Synthesis of Findings and Recommendations
- Appendices:    A. Guiding Questions
  - B. List of Individuals Consulted

## **PART II: CASE REVIEWS**

### **Case Review No. 1**

**“Links Between Sleeping Sickness and Natural Resource Endowments and Use:  
What Can Communities Do?” (Southeastern Uganda)  
(IDRC Project No. 100106)**

#### **Background**

Based on World Health Organization figures, some 245 million African households that depend on subsistence or mixed farming for survival are vulnerable to some form of trypanosomosis, the parasite which causes sleeping sickness in humans and nagana in cattle.

In southeastern Uganda, there is an area covering some 7,000 km<sup>2</sup> with a population of 2.1 million people (much of it centered around the secondary town of Tororo) that has experienced successive epidemics of sleeping sickness and nagana, in which well over a million people and untold number of cattle have died. The most recent epidemic ended in 1993. It was followed by a period of strict implementation of preventative measures and controls, which resulted in a dramatic reduction in the incidence and impact of the disease on people and cattle.

In the past several years however, these programs have gradually disintegrated (due in part to a devastated national economy). The unsurprising result is that trypanosomosis related diseases are making a remarkable comeback.

The single most critical determinant that impacts a human population's vulnerability to trypanosomosis is poverty which, in rural Africa, is almost always linked to natural resource degradation. The average income of the population living in the (rhodescence) sleeping sickness area of southeast Uganda is less than 1 US \$ per day.

In recent years, there have been significant increases in human population and related natural resource exploitation in the study area. Zones that were once evacuated because of trypanosomosis have recently been resettled. Concurrent with these shifts in

population and land use patterns, the economy of the area has suffered severe decline, which in turn causes people to put even more pressure on the environment in order to survive.

Given the current disintegration of Ugandan government services (related mostly to the state of the economy) across all departments, it is no longer reasonable to expect that government will be able to provide trypanosomosis prevention and treatment services that are at all appropriate to the scale of need that exists in southeast Uganda at this time. For this reason, any solution that is to have even a slight hope of being sustainable and effective will have to be community driven.

On the surface of the problem, technical solutions to address the spread of sleeping sickness and nagana have been known for decades. We know that the primary vector of disease (both in humans and in cattle) is the tsetse fly. Effective tsetse control programs have employed a combination of strategies which include fly traps, control of breeding areas (in or near water), limiting human or cattle exposure through alternative land use patterns<sup>4</sup>, and to a lesser extent, the use of preventative sprays and chemical cattle dipping procedures. Of these strategies, tsetse traps have proven to be particularly effective *if* their use is properly managed and they are well maintained. We also know that the continued spread of the disease, as well as debilitation and death that can result from it, can be greatly reduced through vigilance in early detection and treatment.

Even though all of this is fairly well understood in theory, it is not well known what each of these strategic factors would mean in the areas that are at high risk for trypanosomosis in southeast Uganda. Furthermore, the ecosystem linkages between health, poverty and natural resource use in these areas are not well understood. Perhaps most critically, it is not well known how to move past current social patterns of dependency thinking, disintegrated social capital and grinding poverty to develop community led solutions that will be sustainable and effective in the study area.

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<sup>4</sup> which eventually led to resettlement of whole villages in southeast Uganda in response to past epidemics.

## The Project

The International Livestock Research Center (ILRI), the Ugandan Livestock Health Research Institute (LIRI), the University of Guelph, and Makerere University (Kampala) are collaborating on a three year (initial) project to “develop community research strategies for improving human health through the control of rhodescience sleeping sickness in southeastern Uganda” (from the project proposal abstract). Other partners that will cooperate on the intervention, testing and scaling-up dimension of the research are the EU-sponsored FITCA (Farming In Tsetse Control Areas) Project, (which in Uganda is being sponsored by the Minister of Agriculture, Animal Industry and Fisheries and the Ministry of Health); and CAPRI: (Collective Action for Property Rights International), an NGO with experience in community mobilizations.

The core of the research is focused on developing, *with communities*, “a better understanding of their agro-ecosystems” and especially the linkages between natural resource management, social factors and health status (particularly sleeping sickness occurrence), and poverty.

The project design calls for joint community-researcher teams working (initially) in six selected project communities in the study area to

1. develop indicators for (a) poverty, (b) disease, and (c) natural resource use;
2. analyze how these three key factors interact;
3. identify existing coping strategies; and
4. identify ways of improving rural natural resource management, reducing the risk of disease (especially sleeping sickness) and improving rural livelihoods.

The researchers understand that there are inseparable causal and relational links between poverty, natural resource management and disease, that each of these factors feeds and influences the other two, and that interventions in any of them can (potentially) impact the entire set of factors that give rise to high incidence of sleeping sickness. The overall research goal is therefore (from the project proposal) to develop strategies for improving human health through the control of sleeping sickness “using the most

appropriate (defined as feasible, effective and sustainable) mix of natural resource management, public health, social and policy interventions”. (Ibid).

## **Expected Research Outputs and Results**

The following outputs and results were anticipated in the project design.

1. Community-developed indicators related to natural resource endowment, social capacity, and health.
2. Systems analysis related to natural resources endowments and usage, social realities, human and animal trypanosomosis risk and poverty “across a spectrum of agro-ecological zones in southeast Uganda”.
3. Temporal and spacial analysis of events and historical trends related to NRM, human and animal trypanosomosis risk and poverty.
4. Models to predict distribution of poverty, the risk of disease (especially sleeping sickness), issues in NRM and the need for interventions related to trypanosomosis control and poverty.
5. Strategies (based on a combination of community and research analysis) for NRM, poverty reduction and addressing the risk of disease.

## **Current Status of the Project**

To date, the following project activities have been completed:

1. A preliminary study was conducted by LIRI scientist, Dr. Martin Odiit<sup>5</sup> which identified sub-counties in the study area which are most at risk (based on LANDSAT satellite images and adapted after “ground printing”) of sleeping sickness. This work was based in vegetation and land use maps which provided the basis for an analysis of village level risk of sleeping sickness, as well as an historical data related to the incidence of the disease in the past.

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<sup>5</sup> Odiit, M. (2000) “An Overview of Rhodescience sleeping sickness in southeast Uganda”. Presentation at stakeholders meeting – Tororo Uganda, 23-26 May 2000. LIRI coordinated research activities on trypanosomosis and its control in southeastern Uganda.

2. Six study communities were selected, two in each of three districts, one high and one low in sleeping sickness prevalence, surrounding Lake Victoria, Lake Kyoga, and the Mpologoma River, all in Southeast Uganda.
3. Local health and agricultural extension workers in each of the sub-counties were trained in PRA strategies to work together with the Field Research Coordinator (Ms. Winnifred Musoke). These teams facilitated six community workshops in the six study communities. Ms. Musoke is a doctoral fellow working under the direction of Grace Banteby-Kyomuhendo, Ph.D., of the department of Gender Studies at the University of Makerere in Kampala.
4. Participatory workshops were held in all six communities which addressed three components: description of the socio-ecological context; problem analysis and community action plans.

The descriptive phase elicited data related to (a) natural resource availability and use; (b) village institutions; (c) historical background, especially related to sleeping sickness; (d) social structures, especially related to gender, age and poverty, and (e) relevant trends (in disease, agricultural productivity, poverty, etc.).

5. A survey methodology and tools were developed and pre-tested in eleven (11) villages, drawing on experiences from the participatory community studies (as well as from other relevant research projects) related to assessing the usefulness of natural resources, as well as social and community health indicators developed (or adopted) by the project.

### ***Participant Mobilization***

Uganda local government has four levels of councils (designated as LC 1, 2, 3 and 4). LC-I is the closest to the ground at the village level, and it was this level of government (through the auspices of the local council chairperson) that was asked to mobilize workshop participants in each of the six study communities. The LC's were asked to include representatives from all socio-economic levels, as well as women, youth and elder representatives. Workshops were held in central locations, ranging from a

school, to beneath the shade of a tree in the village center. Some 35-50 participants were involved.

### ***Methodology***<sup>6</sup>

Specific participatory techniques used included community *spatial/and land use mapping* (indicating among other things the location of each household, the location of various natural resources such as agricultural and grazing lands, forests, rivers, lakes and swamps, as well as infrastructure such as roads, water points, trading centers and markets. Households known to have had incidences of sleeping sickness were also identified and as well, their location relative to areas of higher and lower concentrations of tsetse flies were noted.

*Seasonal calendars* depicting monthly change activities, agricultural conditions, and constraints were also produced. Participants were asked to record rainfall patterns, agricultural activity cycles (i.e. soil preparation, planting, weeding, harvesting, etc.), seasonality of disease, times of high and low need for cash, times of high and low availability of cash, patterns of indebtedness, time of consumption of various foods, as well as food deficits and surpluses, and pattern of hunger, land use patterns for specific times of the year and labour constraints by gender.

*Focused analysis through group dialogue* was carried out to uncover the community's own understanding of the nature and causes of common diseases and "health seeking" behaviours common in the community for significant diseases (particularly sleeping sickness).

*Community generated indicators of wealth and well-being* were used to rank the socio-economic status of various sectors of each of the study communities in order to analyze the relationship between wealth, livelihood, well-being and vulnerability.

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<sup>6</sup> This section draws on primary data sources: community visits, interviews with key informants, and a preliminary report prepared by field researcher Ms. Babirye Winnifred Musoke. "Participatory Village Workshops to Develop Community Health Action Plans in Six Villages in Eastern Uganda (May 2002). International Livestock Institute and Makerere University.

*Gender aggregated activity profiles* were developed related to crop and animal production, community work, reproductive work and how all of these are related to exposure to tsetse fly infection.

*Recounting the past (storying)* was used to gather anecdotal accounts of how things have changed regarding community awareness, community participation, government intervention, and strategies employed, all related to trypanosomosis control.

*“Triangulation” of data* was done by using a small group format (with men and women working separately) followed by plenary sessions during which data generated by the various working groups was compared, discussed and refined.

### ***Community Action***

In each study location, workshop participants were assisted to develop a “community action plan” that responded to priority issues and needs identified in the description and analysis phases of the workshop. “Village action plans were then developed by consensus and committees chosen for coordinating implementation and evaluation” (from the May 2002 Community Workshop report).

### ***Stakeholder Workshop***

Village representatives from all six study communities participated in a “project meeting” held at the Livestock Health Research Institute (LIRI) near Tororo in December 2000. Each community delegation presented their findings, analysis, and community action plans, heard reports from researchers on their progress and plans, and were able to discuss options for future action with members of the project team.

### ***Reporting***

From each community workshop, a separate written report was produced that describes the outcomes for that place in the form of very basic, descriptive data. However, no systematic analysis of the implications of those data relative to the goals of the study seems to have been undertaken at this stage.

A composite summary report that describes the outcomes from all six community studies, as well as the methodology used in the community workshops and some

preliminary (researcher generated) interpretation of findings across all six communities was prepared in May 2002 by field researcher Ms. Winnifred Musoke.<sup>7</sup> That report says that community workshops were completed between September and December 2000, which means there was a gap of some 16 months between the time the last workshop was completed and the summary report was produced.

## **Evaluating the Intervention and Impact**

The detail provided above describing the community based studies in the six-selected project communities really described all significant project *activities* to date.<sup>8</sup> Insofar as selected communities in southeast Uganda known to be susceptible to trypanosomosis have been engaged in a co-research process, focused on mapping the socio-ecological context, analyzing trypanosomosis risk patterns (NRM, social and economic conditions that contribute to sleeping sickness) as well as planning and mobilizing for collective (community driven) action, *there has already been an intervention and there have been impacts*, even though the project is really very early on in its planned agenda of activities.

Let us be clear and specific. Within the context of ecohealth research, an *intervention* is the process of implementing solutions believed to be effective in addressing some aspect of a human health and/or natural resource management problem within the socio-ecological context that has given rise to the problem. *Solutions are* developed through analysis and testing by researchers (including community researchers). Whether or not a “solution” will be effective or sustainable within the research context is usually difficult to predict until it has been tested extensively through a process of intervention. An *impact* is a change in the socio-ecological context and conditions that has occurred as a result of research activities. Some “impacts” are significant (relative to the research problematic), some are not, and some have a delayed or indirect significance that can only be detected under certain conditions (such as community or institutional learning, which only shows itself if the learning is applied).

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<sup>7</sup> Musoke, Babirye Winnifred “Participatory Village Workshops to Develop Community Health Action in Six Villages in Eastern Uganda”, May 2002, unpublished project document.

There is not a project evaluation per se (mid term or otherwise). Our focus is the interventions and impacts dimension of the project. However, the only thing there is to evaluate at this point is the *activities* to date *as interventions*, and the impacts these activities have had relative to project objectives. Although field activities began in September 2000, there have been significant delays in following up on the initial community workshops with transdisciplinary analysis and a second round of community workshops, leading to the development of integrated strategies for each locality, and eventually a framework for interventions that could be more widely tested, which includes practical indicators of progress in key strategies.

## **Outcomes and Impacts**

Dr. Charles Otim, the director of the Livestock Health Research Institute (LRI) in Tororo began his comments on the research project with the following:

*This Institute has been here since 1956. I was bitten by a tsetse fly while sitting at my desk in November 2001. Why are the tsetse flies still here? We have the knowledge and the technology to solve the trypanosomosis problem. If it needs to be refined for a particular situation, as scientists we can do that. But how do we get the chairman of LC3's (i.e. local government leaders) to work with us to implement what we know? This is the next level of research we need to address.*

Dr. Otim's remarks sum up very nicely the problem of moving from a researcher designed technical solution to an intervention that actually solves the problem on the ground in particular ecosystems and human communities. This is really the nub of what this research project is all about. As mentioned earlier, principle researchers John McDermott and Martin Odit (and their partners) had clearly identified fundamental lines of action that are needed (in general) to prevent sleeping sickness before the project began.

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<sup>8</sup> If there were any other activities, they were not reported to me.

In summary, they are:

1. Natural resource management (i.e. vector and environment management related measures).
2. Public health education and mobilization.
3. Disease prevention, detection and treatment.
4. Poverty alleviation – because poverty drives a high proportion of high risk generating behaviours.
5. Community capacity development for collective action that will be effective in addressing key risk factors, including poverty.
6. Public policy shifts, such that a coordinated and sustained effort is maintained by appropriate government departments, both to address trypanosomosis directly, and to support a broader integrated strategy that addresses natural resource management, human and animal health and poverty.

As Dr. Otim pointed out, one of the challenges lies in convincing key stakeholders (at various levels) to invest resources and energy into taking the necessary steps, and in providing them with the information, tools and technical support they will need in order to scale-up an intervention program across the entire region represented by the study communities.

On the way to developing the partnerships, frameworks, strategies and tools that will be required, there are still important unanswered questions that center on the transdisciplinary analysis needed in order to understand the linkages between health, poverty, and natural resource management for different types of socio-ecological settings. Finally, there is the strategic challenge of designing an effective intervention approach to key stakeholders at the level of households, communities,<sup>9</sup> administrative districts and beyond.

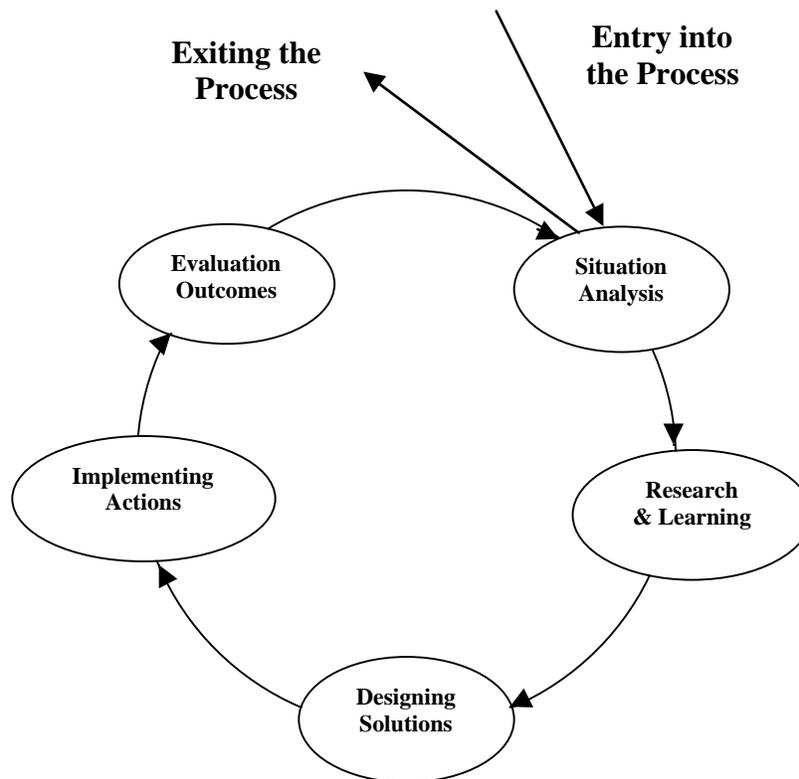
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<sup>9</sup> Such as farmers associations, health communities and local government.

## Methodology as Intervention

The project methodology combines participatory inquiry, participatory action research, and a variety of targeted scientific studies, but the primary methodological path begins and ends in stakeholder engagement, beginning at the community level.

Essentially, such participatory approaches proceed toward the research objectives something like a spiral staircase moves the traveler toward his goal at another level of a building. One seems to go round and round the same point, but actually with each step the researchers travels deeper into the research problematic. A typical round of activity involves (a) analyzing the situation, (b) learning for solution building (i.e. either out of the analysis, or from other sources), (c) designing solutions, (d) implementing actions following the design, (e) evaluating outcomes of the actions taken, and then again (a) situation analysis – however this time it is hoped that the situation will have changed as a result of the actions taken in the previous round (see diagram one).



**Figure 1** – *The Participatory Research Cycle*

By engaging the representative communities in a participatory exercise of mapping their own socio-ecological context relative to sleeping sickness, and to known (and related) determinants, such as poverty and natural resource management, and by supporting them through an initial analysis and action planning process, researchers have (at least in part)

1. Roughed out a map of the ecosystem, as it relates to the research problematic (preliminary though it is at this stage).
2. Identified important social factors related to health behaviours, economic conditions and barriers, community mobilization, and relevant stakeholder involvement (or non-involvement) with the problem (again at a very rudimentary level).
3. Mobilized a significant group of community actors to act upon their own analysis and learning in order to improve health conditions.

Although much is still missing from this picture in terms of the intended impacts and outcomes of the research project, what has thus far been achieved represents a kind of first draft rough sketch which reveals some of the essential shape and elements of a final solution. The “final solution” in the first phase of the project will be a composite of the processes and outcomes of all six communities, synthesized in the form of a process map that will describe how to effectively engage ground level (and other) stakeholders, specific indicators for monitoring progress related to key determinants (human and animal health, natural resource management and poverty), and a menu of strategic options to be selected from and adapted to address sleeping sickness in a variety of socio-ecological conditions which can be adapted to fit virtually all localities within the area at risk for sleeping sickness in southeast Uganda.

## **Assessment of Specific Impacts**

### **1. Stakeholder Engagement**

The research team has engaged six sets of local stakeholders which, in each locality, involved representation from a majority of village households, LC 1

representatives<sup>10</sup> and local extension workers from the Ministries of Agriculture and Health. Researchers attempted to incorporate local extension workers into the facilitation team, but found that there was a very low level of understanding and skills related to participatory approaches (local workers tended to be bossy, top-down and sometimes heavy handed). In response researchers provided a training workshop to introduce extension workers and local government leaders to participatory methods and skills. This training was carried out by a Ugandan NGO, and even their trainers tended to be more directive, and less facilitative than researchers wanted. This problem illustrates a key challenge to the core research methodology of this study (which is inherently participatory), and that is the sheer lack of orientation and training in participatory approaches in the study area, and in Uganda generally.

Despite these challenges, study communities were engaged in the beginning stages of the core research activities, as were important local stakeholders, with the following results:

- a. Local knowledge and memory was consolidated into a systematic descriptive analysis (still preliminary, but definitely moving in the right direction) related to key dynamics of the socio-ecological systems of each community in relation to sleeping sickness. In effect, knowledge and experience that was known “in pieces” (i.e. different bits held by different parts of the community), was gathered up and arranged into a coherent pattern (i.e. a map) that even in its rudimentary early stages, is still useful in understanding the links between key determinants of sleeping sickness.
- b. Through this process, awareness was raised, and considerable community learning took place, about sleeping sickness per se, but also about the interrelated web of factors that generally impact human health, well-being and prosperity. In fact, we now know that single issue health campaigns are often unsuccessful because they try to abstract a problem from its context by dealing only with “the problem”, and ignoring other factors that are co-related through common dynamics within the system.

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<sup>10</sup> LC-I is the lowest rung (i.e. closest to the grassroots) of a four tier local and area government system in Uganda.

This round of mapping and analysis seems to have described the links between natural resource management, poverty and human health, and as such cast a wider net (in its analysis) than sleeping sickness as an isolated problem. Naturally, other health issues (in addition to sleeping sickness), such as contaminated water, malaria and nutrition were prevalent concerns of most of the communities in the study area.

- c. The fact that community action plans were made, and follow-up action did indeed take place in at least three of the six communities, indicates that the process was empowering, in the sense that participants gained knowledge, confidence and collective will that enabled self-determined action to take place.

Interestingly, none of the actions taken were directed at sleeping sickness. In Bugwera, the local “health committee” (formed to act on the workshop concerns), did restoration work on a community well and constructed latrines to protect water quality which was impacting children’s health at the village school, and developed a demonstration garden plot to introduce new varieties of food crops (to address concerns about the lack of availability and diversity of nutritious foods). These activities were carried out as a direct result of the action planning that occurred in the community workshop, and without financial or technical assistance from outside the community.

Another concern addressed by the Bugwera committee was the shortage of classroom space in the local school. The first solution proposed was to send only the boys to school. After more discussion this idea was abandoned because it was “bad for girls and for the community as a whole”.

In times past, dependency thinking had shaped the people’s response to such problems. Bugwera people were used to waiting for “them” to come and fix the problem (i.e. government, or some outside provider). As a result of the experience gained from the community workshop, and the subsequent actions taken to address long standing problems that were carried out with no outside money or technical assistance, the committee decided to tackle the classroom shortage issue. A delegation was sent to the Ministry of Education in Kampala, and a deal was struck through which the minister supplied funds for building materials and the community built the needed classrooms.

With each of these seemingly small accomplishments, the community is learning more about how to analyze problems, to develop solutions, to build appropriate partnerships, and to be accountable to each other for the outcomes of their collective efforts. This process of capacity building and social capital development is fundamental to establishing the foundations for a sustainable solution to sleeping sickness, as identified in the research problematic.

- d. Local government partners were engaged at the LC 1 level, and received (rudimentary) training and experience in participatory research as an approach to engaging grassroots people to solve problems.
- e. As a result of the stakeholder workshop (with representatives from all communities and partner organizations) awareness was raised as higher levels of regional government (LC 1-3), and collaborative arrangements were made to focus health department energy on sleeping sickness. For example, through an arrangement between LIRI and the Tororo district health department, a worker now focuses on sleeping sickness treatment, and the department has restocked supplies for detection and treatment of sleeping sickness. Similarly, in another study area (Sereve), the community health center is now collaborating with LIRI for sleeping sickness screening and treatment, which was not occurring before the community workshops. So, at least in the study areas, the relevant government departments are much more aware than they were of sleeping sickness, (remember that government control and response programs had all but stopped functioning) and at least some level of response capacity to the problem of sleeping sickness has reappeared.

### *Critique*

These are remarkable outcomes, given the very embryonic stages of this research program. Most ecohealth research projects are not (however tentatively) impacting core intervention issues, until much later in the research process. However, there are also significant gaps and important issues that will need to be addressed as the project moves on, if the long range intended impacts of the project are even to be achieved.

### ***Community Participation and Engagement***

Unfortunately, the gains that have been made can easily be diluted and lost as life moves on in the six pilot communities, unless there is timely and systematic follow-up, encouragement, and technical support, and unless the cycle of inquiry, planning, action and reflection is renewed, deepened and reinforced by continuous engagement and support by the research team over a number of years. While a good start has been made, it is only a start. Already too much time has elapsed between the initial workshop and subsequent stages of the work.

Field coordinator Winnifred Musoke has really carried the primary burden of the project work up to this point, and she has done so with considerable alacrity, demonstrating skill, a sound (but basic) knowledge of participatory approaches, and with considerable personal dedication. It appears however, that she has done so without much involvement from her direct supervisor at Makerere University and without the benefit of a great deal of support from the principle researchers.

Although the “PRA techniques” used were participatory in the sense that they engaged community members in providing information, the overall process<sup>11</sup> lacked depth in that it did not deeply engage community stakeholders in analyzing what the data thus far collected actually means in their socio-ecological context relative to the key determinants of health known to be connected to sleeping sickness (by previous research), namely natural resource management, poverty and overall health behaviours and responses.

Furthermore, the various techniques employed seem to have been driven by researcher developed categories of inquiry. There is nothing inherently wrong with researchers providing categories of inquiry, but if the inquiry frameworks were reviewed by a community research team, it is quite possible that other (and sometimes quite important) categories could be added. For example, in the preparation of seasonal calendars, participants were asked to list common diseases and when these occurred, rainfall patterns, agricultural activities, cash flow patterns, food surplus and shortages, land use patterns and seasonal labour constraints. This list may well have been perfectly

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<sup>11</sup> As far as was reported in project documentation and interviews with key project personnel.

adequate for the study communities, but in some rural African communities, another factor that influences what happens is the cultural, ceremonial and religious life of the community. For example, if a predominantly Christian community holds immersion baptisms and other important gatherings at the edge of the river, these activities may expose many people who might otherwise not be at risk to tsetse flies and (if ceremonies are held at night) to anopheles mosquitoes carrying malaria. Sometimes the annual round of religious and cultural activities put a serious financial burden on the poorest, who feel obligated to make contributions of food, work, and money to support a community activity. These are only examples intended to illustrate a basic principle. *The communities own knowledge system, categories of experience and analysis should be incorporated into a participatory inquiry process.* Nothing I read or was told by project stakeholders would indicate that this has yet occurred in any systematic way.

### ***Other Local Stakeholders?***

A weakness in the initial community engagement process was that community organizations (such as committees, farmers groups, church groups and NGO's and community institutions (such as LC 1, 2, 3 and 4, and churches) were not directly engaged as stakeholders, nor represented in the planning and implementation of the first community workshop.<sup>12</sup> LC-I chairmen were asked to assist the researchers, and as a result, there was a solid representation from community households (which is a very good result).

However, organizations such as farmers groups, women groups, and community committees were already working in areas directly related to the research problematic long before this research project began, and they will likely continue to work long after this project is gone. In the long run, these groups will have to play important roles in implementing various aspects of any sustainable solution that is developed.

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<sup>12</sup> Local councils at level I (grassroots), II area, III county, IV district.

### ***Another Community Committee?***

In each of the six pilot communities, a community action plan was developed, and a “health committee” was formed to coordinate the plan’s implementation. While this is the way many development programs operate (i.e. creating their own community committee to work with), it is important to ask whether or not, if given the chance to decide for themselves, all six communities would have chosen exactly the same form for a new committee, or whether either an existing group, or a coalition of community groups might have been proposed to coordinate the work. There are no right answers to the question, “which is the best way” but there are many wrong ones. For example, it can be counterproductive to create new community organizations driven by a process originating from outside the community. Often the same key people serve as “sparkplugs” to most community development initiatives, and these few individuals are very often split between many demands on their time and energy. A new committee may not be an inefficient use of the community’s human resources. Sometimes the creation of new groups by outside projects generates jealousy and disunity, because it is perceived that certain individuals now control “that project”. None of these problems may be occurring in the study communities, but if they are, the long-range sustainability of solution building carried out through collective action may already be in jeopardy.

## **2. Transdisciplinary Work**

In addition to the community stakeholders already engaged with the core research questions, the research team itself consists of scientists from the following disciplines: medicine, veterinary epidemiology, entomology, agricultural economy, land use management, livestock health and sociology. The full capacity of these various disciplines has not yet been applied to the core ecosystem research task of mapping the socio-ecological systems in relation to the research problematic. This work would need to be done *in partnership* with community representatives who participated in the community workshop, and who would serve as the disciplinary experts related to local knowledge.

This step is, of course, key to developing the best possible analysis from the data already collected, and to planning the next steps related to each of the six pilot

communities. It is also fundamental to the generation of research outcomes such as health and NRM indicators, and the design of a battery of solutions that can be tested and refined through a subsequent set of interventions.<sup>13</sup>

In the final report (2001) of An Integrated Assessment of Agricultural Communities in the Central Highlands of Kenya (center file 003157-002), which John McDermott explained) provided a prototype methodology now being refined in the Uganda Sleeping Sickness Project, John McDermott, Thomas Gitau and David Waltner-Toews state the following.

*The interactions between communities and researchers were an essential feature of the agro-ecosystem health process in the project ... Researchers effectively complimented community-based actions. Essentially all community based actions ... required technical expertise and links to technical and administrative organizations outside the village (pp 21-22).*

Up till now, the Ugandan Sleeping Sickness Project has not had enough of precisely this kind of researcher – community collaboration. These two realities of ongoing (scientific and community) work have to be synchronized and coordinated. Much like the wings of a bird, these two essential elements must be held in balance, such that neither one is overpowered by the other. In the Uganda Sleeping Sickness Project (for whatever reasons) the influence of the scientific team has not yet been felt.

In conversations with team coordinator, Dr. John McDermott, two things became clear to me. First, starting with the community inquiry was a deliberate strategy, and it has proven to be extremely effective in laying a solid foundation for solutions based on collective action. There is now much to build on that would have otherwise been missing when the time came to test interventions. In fact, this strategy illustrates one important approach to including “intervention” as a discipline within the transdisciplinary circle of the research team, and undertaking lines of inquiry from the very beginning of the research project that make the process of intervention itself part of the research problematic.<sup>14</sup>

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<sup>13</sup> Presumably, initial transdisciplinary analysis of data was begun at the Tororo Stakeholder’s Workshop, in December 2000, but no documentation was shared with me that indicates what resulted from this work.

<sup>14</sup> As discussed earlier, the project was handicapped for the lack of skilled and knowledgeable participatory practitioners.

Secondly, John McDermott made it clear that there have been delays in the forward momentum of the research, which now need to be rectified. In my view, what is now needed is a field team retreat, (including community representatives) during which the various disciplinary specialists work together (based on data already collected) to

- a. construct a map of the ecosystem (six separate maps, and then a composite in relation to the core research questions);
- b. construct a map of the social systems (six separate maps, and then a composite) which includes all stakeholders at all levels; leading to
- c. the development of a number of composite scenarios that represent the range of socio-ecological contexts in the study area;
- d. identify gaps in knowledge and understanding for further community based research, and for specific scientific studies, and from these, plan the next phase of research;
- e. develop a menu of possible solutions suggested by the data thus far collected (linked of course to the base of knowledge and experience researchers bring to the project);
- f. identify possible intervention strategies for testing “solutions” that are ready to be tested; and
- g. make a stage two research and intervention-testing plan.

While I realize that steps like this may seem obvious to these researchers, the fact remains that almost two years have passed between the first community workshop and the present. In participatory work, timing is important, and maintaining momentum is critical. If communities in southeast Uganda could have solved the sleeping sickness problem on their own, they would have done so long ago. Similarly, if the legion of scientists and experts that have worked on sleeping sickness in Africa for almost 30 years could have solved the problem on their own, they would have done so. The ecosystem approach brings these two groups together, and describes a pathway to a sustainable solution. But this collaboration requires sustained face-to-face interaction, and mutual engagement (i.e. the scientists and the stakeholders) in an interactive action and reflection process.

## **Recommendations**

### **1. Link problem analysis explicitly to the determinants of health**

A key underlying question in any ecohealth research project is what are the primary determinants of health within the ecosystem under study, and how are these determinants linked to the core problem of the research (in this case trypanosomosis). This is important to know for a variety of reasons. Overall health is related to resiliency and vulnerability. Often the only way to prevent sickness is to systematically work on the factors that determine well-being. Specific diseases are usually linked to a cluster of determinants. The project already plans to map the relationships between natural resource endowment and management, (i.e. ecosystem mapping), poverty and health. Thus far the focus of health data collection has been on cataloguing disease patterns. A more explicit look at factors that influence health in general, and sleeping sickness in particular will assist researchers to develop more effectively targeted interventions.

### **2. Systematically identify and engage stakeholders beyond the community level**

A “stakeholder” can be defined as any person or group whose participation is required in implementing a sustainable solution. Thus far the project has only nominally engaged local government officials and extension workers at the community level. The implementation of a long range scaled-up solution to sleeping sickness in southeast Uganda will require the sustained involvement of institutional actors at all levels of Uganda government, as well as significant support from key NGO’s, research institutes, and development programs.

At a time when government capacity to respond is seriously impaired by a financial crises, the research process has shown that many rural Ugandans in the study area view disease vector control as a government function. This view has left communities waiting for solutions to appear – a typical dependency syndrome response. And yet, it is the government, which holds some of the key cards, such as the management of health and veterinary services, and the enforcement of environmental management policy.

The problem to be resolved is how can communities, government departments and other key NGO actors work together to build a viable and sustainable solution to the problem of sleeping sickness in southeast Uganda?

An important task for this research project is to build viable relationships and networks between key stakeholder groups, and to assist them to collectively develop a workable and effective set of strategies that can, and likely will be sustained. This is best accomplished by involving all-important stakeholders very early on in the research process, so that they are educated about and committed to solutions as they emerge.

### **3. Identify community capacity development needs related to the implementation of sustainable solutions, and include community capacity building as a part of the intervention package that is being designed and tested**

A central aim of this project is to develop community driven, and where possible community implemented solutions that will be both effective and sustainable. A great deal is thereby expected of communities (and not without reason) for which many rural African communities are not now well prepared. Factors such as leadership, management of programs and resources, the capacity to develop and work from a community vision, and the ability to engage community members in constructive and sustained participatory development processes are examples of capacities for which learning is often needed.<sup>15</sup>

The community workshops introduced a pattern of problem identification, inquiry and learning, planning, action and reflection. This basic process can now be built upon to prepare communities to be the principle implementers of intervention leading to sustainable solutions.

### **4. Shift from a “collective action” to a “community development” focus**

Collective action is working together to solve a problem, implement a solution or deal with an emergency. Community development often includes collective action, but is a much more comprehensive process of inquiry and learning, building of essential relationships and partnerships, designing, testing and implementing solutions, and evaluating progress. Indeed, the participatory research cycle described earlier (see page 19) is also one way of describing the essential dynamic of community development. The core of community development is the development of common oneness (or unity), of thought and action that not only is sustained, but also that is invested in the process of

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<sup>15</sup> See “Assessing Community Capacity for Change”, Michael Bopp, Kathy Garmann, Judie Bopp, Lori Baugh Littlejohns, and Neale Smith (2000) Four Worlds Press, Calgary.

solving common problems. There is much to learn about how such a process can be fostered and assisted to develop to the point where it is self-sustaining.

To conceptualize what needs to happen in the pilot communities in order to develop a sustainable solution to the problem of sleeping sickness as the implementation of a few measures through “collective action” may well be to seriously underestimate the dimensions and complexity of the transformation that will need to take place, considering that the primary determinants to be addressed are related to poverty and natural resource management neither of which are lacking in complexity. The full range of factors that have to be transformed includes individual knowledge and thinking patterns, as well as collective attitudes, values and habits, and a dense web of relationship patterns (political, economic, social and cultural), that shape family and community life, the community’s relationship with the natural environment, as well as their relationships with the political and economic systems of southeast Uganda.

The development of social capital, knowledge, skills and institutional strength that this will require needs a sustained process of community development (from within), which will of course include collective action, but will also include the development of community capacity to sustain a process of change and development over a period of many years.

For these reasons, it is recommended that the project introduce a community development perspective into its processes of community engagement. To prevent such an approach from drifting away from the core research issues, as well as to assist the project team to ensure that “soft” process concerns such as participation and social capital development are effectively linked to the key strategic issues, it is recommended that a logical framework such as the following be developed and used.

In the sample framework below, six (6) determinants of sleeping sickness status (identified in the research proposal) are shown as follows: a) natural resource management; b) disease vector control; c) health measures implementation (i.e. early detection and treatment); d) poverty alleviation; e) community capacity investment; f) appropriate public policy development and implementation.

These core determinants will need to be addressed by community development activities that are supported and made possible through six domains of capacity that require systematic strengthening. They are: a) learning and knowledge development; b) social capital development; c) participation and empowerment; d) accessing and effectively managing resources; e) leadership and organizational capacity; and, f) appropriate stakeholder engagement and partnership.

<b>Community Capacity Development</b>	Learning and Knowledge Development						
	Social Capital Development						
	Participation and Empowerment						
	Accessing and Managing Resources						
	Leadership and Organizational Capacity						
	Appropriate Stakeholder Engagement						
		Natural Resource Management	Disease Vector Control	Health Measures Implementation	Poverty Alleviation	Community Capacity Investment	Appropriate Public Policy
		<b>Key Determinants of Health</b>					

**Figure 2 – Linking Community Capacity Development with Key Determinants of Health Related to Sleeping Sickness**

The likelihood that a particular determinant will be effectively and sustainably addressed by community and other stakeholders is directly proportional to two inter-related factors; a) capacity development in each of the six identified community capacity domains<sup>16</sup>, and b) the application of each of the capacities to that particular determinant.

Just as indicators are needed for progress related to NRM or health outcomes, they are also needed to measure community capacity to carry out a sustained program effort<sup>17</sup>. For example, indicators about “Learning and knowledge development” might cover such issues as what needs to be learned, who needs to learn, and evidence that learning has actually taken place. Some researchers have used a ranking scale (e.g. 1 – 10 or 1 – 7), and asked participants to use the indicators of capacity to rank how much capacity is in fact present at the time of the ranking<sup>18</sup>. Asking groups of community stakeholders to rank their own capacity based on community generated indicators produces two kinds of useful data; a) the ranking itself, which although subjective is still indicative of the actual state of affairs related to that capacity; and b) the interpretation of the ranking provided by participants which often reveals useful descriptive data that can be very helpful in understanding what is really happening or not happening relative to the indicators.

In summary, the reason for focusing on community capacity development in this evaluation report is to make the point that this research project aims to develop solutions that can be carried out by sustained community action. However, it can be a big jump from “can be” to “would be” carried out, and often the difference is community capacity. A comprehensive community development approach not only assumes that building human and institutional capacity is a necessary part of the work, but it also systematically links capacity development to the strategic lines of action “the community” has chosen to work on, and calls participants to account in terms of the effectiveness of the work in advancing the process systematically towards the goals.

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<sup>16</sup> Please note that these are only examples of community capacity domains. There are many other capacities that could be relevant, and they need to be identified by the research team.

<sup>17</sup> See bibliography on Community Capacity and Health at the end of this section.

<sup>18</sup> See Riften, S. (1988) “Primary Health Care: on Measuring Participation”, *Social Science and Medicine* (9), 931-940

## **Summary of Tools and Methods the Project is Developing**

The following tools and methods have been developed.

1. The use of a participatory action research approach applied to ecohealth research.  
Many projects use the rhetoric of participation. This project has actually focused thus far in much of the life of the project its methodology around community participation. Once refined, this approach (which was first successfully tested in the IDRC sponsored Kiamba agro-ecosystem study, eastern highlands, Kenya, completed in 2000, centre file 003157-002) will be applicable to many ecohealth research contexts.
2. A tool kit of qualitative and quantitative indicators of natural resource management, poverty and disease which can be used to establish a base line, and then to measure progress in comprehensive ecohealth and health development work, including work on trypanosomosis.
3. Based on satellite photographs, maps of vegetation cover and land use linked to village level of risk have been completed on the wider study area.
4. Fitca (one of the partners) has completed a trypanosomosis prevalence on cattle survey in 165 randomly collected villages, which further adds to information on spatial risk.
5. Simple models to predict poverty distribution, disease risk and natural resource management requirements for targeting trypanosomosis control and other health and anti-poverty interventions.
6. A framework to guide the process of interventions and a menu of strategic options to address sleeping sickness in a variety of socio-ecological contexts, suitable for scaling-up across southeast Uganda.
7. A survey instrument for measuring the distribution of disease prevalence in relation to known risk factors (tailored by the village studies and other work) has been piloted.

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## Case Review No. 2

### **“Enhanced Human Well-Being Through Improved Livestock and Natural Resource Management in the East African Highlands” (Ethiopia)**

**(IDRC Project No. 03494)**

#### **Background<sup>19</sup>**

The highlands of East Africa are one of the most densely populated regions of the world. The Ethiopian highlands makes up roughly sixty percent of this large area (3.5 million square kilometers sprawling across Ethiopia, parts of Kenya, Tanzania, Uganda, Rwanda and Burundi), in which severe poverty, malnutrition and soil degradation are not only common, but worsening.

The litany of problems in the Ethiopian highlands includes human population pressure, deforestation, poor water management, declining nutrition and soil productivity, rapidly decreasing cereal crop yields, and a cyclical pattern of droughts for which traditional knowledge provided coping strategies, but which now seem to have been lost or set aside because of rapid social and economic changes, conflict, politically created insecurities related to land tenure, and the sheer pressure to survive from day-to-day. Livestock production holds a critical place in highland farming systems (forty percent of agricultural GDP), but declining availability of forage is a serious problem.

Inspired by a regional research program for the highlands area, a bio-economic farming systems model was developed (as a part of this IDRC Project) that predicts (theoretically) that it is possible, through the effective use of various low-cost technologies, to increase farm income as much as tenfold, to reduce soil degradation by twenty percent, and at the same time to provide every adult with a minimum of 2,000 calories of food per day.

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<sup>19</sup> This introduction section is adapted from the case study on this project in “Transdisciplinarity and Participation: An Evaluation of Transdisciplinarity and Participatory Aspects of the IDRC Ecosystem Approaches to Human Health Project Initiative, Final Report”, February 2001, prepared by Michael Bopp.

It has been well known for some time that highland agricultural productivity *can* be significantly increased through improvements in livestock management. Indeed, in the Ethiopian highlands, cattle are “life,” in the sense that they provide food, income, fuel, draft power and fertilizer. Traditional knowledge suggests there is a direct correlation between human well-being and the number of cattle a family owns. The results of good management have been shown to contribute significantly to the alleviation of poverty and malnutrition, and to better natural resource conservation. Currently in the Ethiopian highlands, livestock productivity is kept well below the agricultural potential of the area by animal diseases (mostly carried by ticks, and tsetse flies) and by the lack of adequate access to nutrients (i.e. high quality feed).

## **The IDRC Project**

A group of partners led by the International Livestock Research Institute (ILRI) in Addis Ababa decided to test the suitability of the “agro-ecosystem health paradigm” in terms of its usefulness in guiding research to address the question, “How can livestock production and related natural resource management strategies improve food security and human health?”

The basic starting point of the Project is the idea that discipline-specific component research approaches of the past have failed to properly understand what is happening in complex “agro-ecosystems”, and so, despite doing “good research,” these approaches have not been able to develop practical solutions that work within the ecological, production and social systems that overlap in any given real world context.

The basic focus of the Project is to monitor human well-being and environmental quality in relation to a variety of technological and policy innovations introduced in an effort to improve livestock productivity, human nutrition and health, and natural resource conservation.

The specific objectives of the project were as follows:

1. to develop a framework to describe and characterize the agro-ecosystems at various scales in the highlands, focusing on the linkages between human, environmental and agricultural health from a community-based perspective;
2. to assess alternative participatory learning and action mechanisms for local people to identify and evaluate their own ecosystem health problems and to identify action plans for improvement.
3. to develop with all stakeholders, verifiable and measurable indicators of agro-ecosystem health, linking environmental, agricultural and human health perspectives; and
4. to assess the impacts of interactions of potential interventions on various elements and stakeholders in the system. Of critical importance was to assess the linkages between different natural resource management strategies and human well-being including gender roles and equity. (*Adapted from the Final Technical Report, submitted to IDRC in March 2002, p 5*).

In essence the project set out to design, develop and test a combination of strategies calculated to transform a range of mutually reinforcing factors related to environmental degradation, agricultural productivity, nutrition, poverty, and human health. This was done for three distinct types of environments corresponding to low, medium and high elevations, each of which have a distinguishing set of natural resource endowments and challenges, and related social characteristics.

The proposed activities through which these goals were to be met (as described in the original proposal) were as follows.

1. **A participatory stakeholder consultation and analysis** – of how to best proceed with the *research* process, and an identification (with stakeholders) of locally understood indicators of human health, adequate nutrition, healthy soil, crops and livestock and effective water management. The research plan called for a consultation process in which scientists shared their discipline-based indicators, and from this discussion, a consensus was to be reached on a final set of indicators to be monitored

during the project. Another goal of this stakeholder consultation process was to identify suitable interventions for testing.

2. **Plot, farm and community surveys to understand land degradation** – Formal and informal surveys were undertaken at the plot, household, and community levels to look at the linkages between current land practices, soil degradation, water quality, productivity and human health. A variety of participatory techniques involved local farmers in much of this work.
3. **Development of land management technologies** – for improving productivity and natural resources quality. In this activity, researchers worked closely with “stakeholders” to delineate different land types and their production potentials, and to develop suitable land-use options for testing. Then farmers or farmer groups were engaged in experimentation.
4. **Trials on livestock technologies and management approaches** – This theme involved testing and assessing various options for improving livestock management and production.
5. **Human health and nutrition household assessments** – This line of action involved the development and implementation of a comprehensive household survey aimed at understanding the health and nutritional status of people living in the study area, as well as identifying the major determinants of health.
6. **Bio-economic modeling, adaptation pathway and definition of recommendation domains** – Bio-economic modeling was proposed in order to integrate biophysical and socio-economic factors, so that options could be designed and considered for how to address critical challenges facing farmers related to soil erosion, nutrient depletion, water quality, farm production, economic returns, poverty and ill health. Specific adaptation pathways for proposed solutions were to be identified. The modeling (mentioned in the introduction) which produced a trade-off analysis demonstrating the possibility of a tenfold increase in farm income and a twenty percent reduction in soil reduction while still providing adults with 2,000 calories a day, was completed as part of this activity.

7. **Training, capacity building and dissemination** – This theme entails a series of interventions through which twenty to twenty-five selected local participants would be trained in participatory research approaches and the agro-ecosystem health framework in order that the insights and processes begun by the research project could continue. As well, knowledge generated through the Project would be shared and disseminated to “the community” in ways that are “simple and can be interpreted by the community” (from the original approved proposal).

## **The Partners and the Team**

Clearly this broad ranging set of research objectives and activities requires a diverse transdisciplinary team of partners and specialists to carry it off. As the project began, partner institutions involved in the Project included the following.

1. The International Livestock Research Institute (ILRI)
2. The International Centre for Research in Agro-forestry (ICRAF) via the African Highlands Initiative
3. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
4. The Ethiopian Agricultural Research Organization (EARO)
5. The Ethiopian Health and Nutrition Research Institute (EHNRI)
6. Addis Ababa University
7. The University of Guelph
8. The University of Florida
9. The University of Manchester
10. Farm-Africa
11. Metcha Catholic Mission (Ginchi, Ethiopia)
12. Dendi Werendi Bureau of Agriculture (Ethiopia)

The core team of specialists included several crops and livestock systems scientists, an agricultural economist, several health and nutrition specialists, water and soil

scientists, bio-economic modeling specialists, and a gender and a livelihood specialist. Linkages to other related projects (such as the Joint Vertisols Project [JVP] was an important aspect of the team's strategy to ensure that, as the need for additional expertise arises, specialists from other programs can be brought into the process.

A few of these "partners" did not participate meaningfully in the project (Farm-Africa, the University of Manchester, the University of Florida) but most did, and many were influenced by the ecohealth paradigm as a result.

## **Expected Research Outputs and Results**

The following outputs and results were anticipated in the project design.

1. A comprehensive framework that characterizes the agro-ecosystem at various elevations in the Ethiopian highlands, focused on the linkages between the state of the ecosystem, the agricultural production system, and the conditions and prevalent patterns in the human communities and social systems living within and influencing the agro-ecosystem.
2. Verifiable and measurable indicators of agro-ecosystem health which link environmental, agricultural and human health perspectives.
3. A variety of technologies related to farming methods, livestock management, natural resource management and human health were to be introduced and tested for their effectiveness in addressing critical agro-ecosystem health challenges.
4. An assessment was to be made of the impacts of various combinations of potential interventions on various stakeholders within the system, particularly farming. NRM and health strategies, and their impact on human well-being, (aggregated to show the impact on men, women, children and the poorest as distinct groups with potentially different impact profiles).
5. A bio-economic model adapted for use in the study area was to be refined and adapted to predict the trade-off implications of various interventions related to critical

challenges facing highland farmers relative to soil erosion, nutrient depleting, water quality, farm production methods, economic returns, poverty and ill health.

6. Through participatory engagement, and training, a core group of community members, (supported by local providers) were to be assisted to internalize the ecohealth research approach, to carry forward solutions designed by the project into community action, and to sustain the momentum of intervention processes and impacts beyond the presence of outside researchers.

## **Current Status of the Project**

The first phase of the project has now been completed. A final report has been submitted to IDRC,<sup>20</sup> and all project funds have been spent. However the project is not really completed. Like many ecohealth research projects, it took this research team the better part of two years (and an evaluation visit that focused on methodology) to really grasp the concepts of community participation and transdisciplinarity as they apply to hands-on field research activities.

The team did receive a time extension (without additional funds) from February 2001 to February 2002, and it is now clear that this time was used very effectively. At least in part as a result of the evaluation visit,<sup>21</sup> during the last team visit, the team made an extraordinary effort both in involving the study community, and in moving toward a transdisciplinary perspective in research outcomes.

Essentially, much of the basic science and solutions-design work has been completed (although the team does feel that further refinement will improve what has been developed). As well, the initial phases of community (and other relevant) stakeholders' engagement has been completed, and there now appears to be a solid base of local stakeholder consensus on what the problems and issues are. A community stakeholder core group has been established which is subdivided into two working groups, one for

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<sup>20</sup> See "Enhanced Human Well-Being Through Improved Livestock and Natural Resource Management in the East African Highlands (#3494), Final Technical Report", March 2002.

<sup>21</sup> See Footnote #19, p 37.

lower and one for higher elevations. This group is motivated, and is doing its best to introduce various technologies and solutions to the community.

What has not happened is the systematic development and testing of the interventions within the socio-ecological context, and the measurement of the impact of those interventions relative to the core problems and issues the research project set out to address. It's a little like assembling the plans, materials and tools needed to build a house, but never actually beginning construction. This is not a criticism of the project team. It is recognition of the stage in the ecohealth research process that this team has been able to reach at the end of its first phase of work.

## **Evaluating Interventions and Impacts<sup>22</sup>**

### **Introduction**

By *intervention* in ecohealth research we mean the process of implementing solutions presumed to be effective in addressing some aspect of a human health and/or natural resource management problems within the socio-ecological context that has given rise to the problem. *Solutions* are developed through analysis and testing by researchers (including stakeholders who are also co-researchers). It is usually difficult to tell whether or not a “solution” will be effective or sustainable within the research context until it has been tested extensively through a process of intervention.

An *impact* is a change in the socio-ecological context and conditions that has occurred as a result of research activities. Not all impacts are significant (in terms of the research problematic), nor are all impacts good or even intended. Some impacts have a delayed or indirect significance that can only be measured under certain conditions. (e.g. community learning may be invisible until the learning is applied; the true impact of a community drainage system is seen during the rainy season; the impact of water filters on health may only be seen when other related factors are also addressed, such as how water is handled after filtration, etc.).

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<sup>22</sup> Please note that some version of this basic definitions discussion is repeated in all three case reviews for the benefit of those who will read only one particular case.

It is important to also note that some aspects of community based research (such as community participatory engagement) are in and of themselves, a kind of intervention in that they increase community awareness, build capacity and collective will to address issues, and often lead to the community taking action on its own to address various aspects of “the problem” as they see it. The uptake of technical solutions, and their integration into the life world of stakeholders is ultimately a process that depends on the education, engagement and collective action of stakeholders themselves. Insofar as a research strategy is also building stakeholder capacity to carry technical solutions into their (socio-ecological) life world, it may also be considered an “intervention”, and as such, is likely to have impacts.

Following is a summary of important project outputs, and a brief assessment of each in terms of overall project impact, and in terms of the research goal of designing and testing interventions, which is integral to all ecohealth research projects.

### ***Stakeholder Engagement***

The primary stakeholders who have been engaged in the work of the project are community members in the study area. Other players, such as local government personnel and the Metcha Catholic Mission have been supportive, but not central to what has thus far occurred.

Community members have been engaged in consultation and co-research activities aimed at the following:

- a) identifying locally understood indicators of human health, adequate nutrition, healthy soil, healthy livestock, effective farming outcomes, and effective water management.

Researchers shared their (discipline based) indicators, and a framework was developed to measure progress in agro-ecosystem and health improvements resulting from various interventions.

- b) characterizing the agro-ecosystem at three elevations (low, medium and high ground) within the Ginchi Watershed (study area) along with descriptions of land use and natural resource management patterns and issues.

- c) identifying social characteristics related to poverty and household living patterns, (levels of wealth, patterns related to sleeping, cooking, animal care, diet, hygiene, gender roles, distribution of labour, childcare, food security, etc.).
- d) analyzing the combinations of factors that lead to environmental degradation, poor agricultural and livestock productivity, poverty and ill health in the three sub environments (low, medium and high elevation).
- e) initial testing of various technological solutions, such as a special plow designed for easier and more effective tillage and drainage of vertisols, and sand filters for water purification.

As well, a local “Agro-ecosystem Health Committee” was elected to coordinate community action resulting from the research project. This group now contains two traditional leaders plus one representative from each of six zones in the study area. Together these eight people (one of them a woman) have taken up the challenge, which the research team put to the community; “you begin working and we will support you”.

In fact, the people of the Ginchi Watershed area seemed dispirited, despondent and trapped in dependency thinking as the project began, and even well into the second year. Now the local committee is clearly demonstrating leadership and initiative. They have themselves organized one general community meeting, have identified water as the community’s priority health concern, and have moved ahead to carry out or to inspire a variety of community and household based initiatives, including:

- building enclosures for water sources to prevent contamination;
- building latrines;
- building drainage ditches;
- encouraging irrigation at higher levels;
- recovering traditional terracing techniques;
- building outdoor kitchens to prevent indoor smoke contamination;
- building animal shelters so livestock are no longer kept overnight inside living rooms; and

- building sleeping platforms, so that people (especially children, who are the most vulnerable) don't have to sleep on cold wet ground.

Now community stakeholders are initiating contact with the research team, reminding them of their promise to help “if the community begins on its own”, and specifying their own agenda for agro-ecosystem health improvement, based on what they learned from research activities, supplemented by their own analysis.

Although researchers do not seem to have been thinking about their activities with the community as “intervention”, there are clearly impacts that have come from the implementation of an intervention (as defined above), in that participatory engagement is not only a strategy for enquiry, but also a necessary part of sustainable solution building. Judging from a brief meeting with four members of the Ginchi Community Committee, from analysis provided by research team members, from a previous visit to the study area in 2001, and from my own field experience in participatory development, **a foundation has been laid for long term action, but this momentum is unlikely to be sustainable unless another phase of research and action focused on refining and testing interventions is pursued.** In general, whether it is the research team, or some other actors (such as an NGO or government health and education officers) that provide guidance training and support, the Ginchi Agro-ecosystem Health Committee will need considerable technical assurance and guidance for some time before it will be able to serve as a self sustaining carrier of innovations within the study area. There is now a small (and receding) window of opportunity to build on what has been accomplished, that will gradually fade away if ILRI doesn't find a way to continue the research and stakeholder engagement process beyond solution identification to refining and testing interventions.

### *Other Stakeholders*

A “stakeholder” may be defined as any person or group that contributes to the research problematic, is impacted by it, and/or who must be a part of building sustainable solutions. Researchers indicated in their “Final Technical Report” (2002), p 43 that the local government (Woreda) with all its supporting departments had promised to provide some technical assistance and support to the study community, after being briefed on the project findings and outputs to date. The Metcha Catholic Mission is also very interested in contributing to solution building. The reality is, however, that these agencies were working in the study area for years before the study began, and very little effective engagement of either of the core problems has ever occurred before.

It seems to me that, as with community members, the key to fostering effective and sustained transformational work on the part of other stakeholders related to the fundamental challenges taken up by this research program (poverty, ill health, natural resource management, agricultural practices, nutrition, health, child development, etc.) is capacity building. What has happened thus far is the research team has “mapped” the problem set and identified and/or developed a menu of possible solutions that now need to be integrated into the community’s thinking and ways of doing things. Some (but not all) of the key stakeholders that need to be involved have been engaged, and the important phase of ecohealth research in which technical solutions are further developed into viable intervention remains largely unfinished.

It is certainly not the job of a research project to carry out long-term interventions. That work needs to be done by other actors. It is, however, (in my view) the role of ecohealth project teams to identify who those actors are, and to translate research outcomes into strategies and tools that these actors can use. This almost always will require collaborative work between stakeholders and the research team.

An important part of that work is usually the education and training of key stakeholders, as well as the provision of initial technical support as these important actors learn to understand the problem, and their role in solution building. A participatory research methodology, in which stakeholders become co-researchers in the quest for solutions and effective strategies is often the most effective way to promote this kind of

learning, but it is not the only way. Seminars, training conferences, guidebooks, tool kits and field coaching are examples of other strategies that can work, depending on who the learners are, and what their current orientation, capacity and willingness to learn is.

In the Ginchi Project a second phase of research should focus on refining and developing technical knowledge and solutions into interventions, and on building the capacity of various stakeholder groups to do their part in carrying out an integrated and sustained intervention.

Beyond the community level, it seems to me that a much more careful stakeholder analysis is needed.

**1. Government** – at the Woreda (local government) level, there are departments of agricultural extension, land use, forestry, public health, and water and sanitation. To what extent do these departments a) understand the ecohealth approach and have the will to learn to work within an ecohealth framework? b) have the will and the capacity to work together with each other? c) have the capacity to provide useful technical assistance to the health committee and other community actors? What about beyond the local level? What help can be expected? In general, “handing over” to government should imply that government has the capacity to effectively sustain whatever is handed over to them. Do they? What sort of support and capacity building do government actors need?

**2. Political Leaders** – a key issue identified during the first phase of research that prevents community stakeholders from investing in innovations that might well address important health and natural resource management problems is the perceived absence of land security, and the fear of yet another forced villagization, or land redistribution scenario. Fear that all they invest (in labour, time, money, etc.) to build a proper house, sleeping platforms, animal shelters, water systems, irrigation systems, latrines, or even to practice traditional terracing and other soil conservation measures, will simply be taken over by someone else, is a serious disincentive to innovation and sustained community development.

Political leaders and policy makers clearly have a role to play in finding a solution to this problem. Thus far the research project has not yet systematically “mapped” this situation, and involved appropriate stakeholders in finding solutions.

**3. NGO's** – some long-term actor is needed that can focus on building community capacity for agro-ecosystem and community development. This actor will need:

- a) to have a solid grounding and orientation to holistic participatory development;
- b) to be engaged as a partner with the research team such that the basic insights, maps, tools and strategies that are developed are understood, internalized and seen to be integral to that actor's mission and methods; and
- c) to be committed to working with the communities in the study area for at least two years after the research project has ended.

While government may be able to play some of this role, governments in general have not proven to be politically effective or even interested in community empowerment and capacity building. An international NGO (such as CARE International) working with various local actors has often proven to be the most effective kind of actor to play this sort of role.

In any case, right now there appears to be no one able to play this role, while it would have been much better to bring in such a partner at the beginning of the research,<sup>23</sup> it is now essential to do so, in order to address the ethical concerns that the community not be used as a research “guinea pig” without being enabled to really benefit from the project.

**4. Beyond the core group to community members** – as stated earlier, a core group of community leaders has been engaged. (It is worth noting that this research team has demonstrated a tremendous capacity for learning, related both to transdisciplinarity and community participation. At the point of the “Transdisciplinarity and Participation” evaluation visit to the project (November 2000) there was very little evidence of effective community participation. Little more than 18 months later, a fairly solid foundation of community engagement has been built.

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<sup>23</sup> It now appears to me that such a partnership should be required in all ecohealth projects, if not from its earliest stages then certainly by the mid-point of project life.

In a subsequent phase, this work needs to be consolidated through systematic training, (which was one of the objectives listed in the original research proposal) as well as co-research activities focused on refining and testing interventions.

It will be very important in this subsequent work to find ways of engaging constituent subgroups within the population, such as women, youth, farmers, the poorest, etc. A “community” is almost never homogenous. Reaching a core group of community sparkplugs is good, but it does not serve the requirement of reaching important aggregates within the population with the process of testing interventions to impact human well-being. The most likely means to this end is through the work of the (probably expanded) core group, which will likely require training and coaching in participatory approaches in order to be effective.

**5. Characterizing the agro-ecosystem and developing indicators of progress** – a comprehensive “map” was developed, which shows the primary features of the natural environment, prevailing farming systems and relevant social patterns, which, along with detailed linkage models showing the interactive relationships between various dynamic elements of the research problematic under study. To the extent that Ginchi people participated in the data collection, analysis and model building processes, they no doubt learned so “see” the agro-ecosystem upon which they depend and within which they play such a critical role as a single integrated web. In fact, much of the analysis was external to the community. Community members helped with data gathering and worked with researchers to develop community generated indicators for a range of factors, such as wealth, health, nutrition, livestock health, etc. However, the integrative scheme of thought that connects all of these factors into a comprehensible organic system of linkages and impacts was only beginning to be understood by community participants as the first phase of the project ended.

One of the primary interventions still left undone will involve finding ways of helping the community to internalize the ecohealth perspective and approach to development problem solving, so that the processes of community problem solving related to environmental degradation and natural resource management, agriculture and livestock

production, poverty and human health can benefit from the outputs of this research project.

**6. Testing insights, technologies and solutions** – a fairly impressive list of insights, technologies and selections were explored and tested in the first phase of research.

For example, the insight that child cognitive development was likely being impaired by nutritional deprivation due to prevailing food shortages in the study area was confirmed by a child development testing program that was carried out as part of the study. This work highlighted the urgent need to focus intervention (at least in part) on families of children ages 18 – 24 months, who are the most vulnerable to permanent developmental impairment. To the extent that tested families and the Agro-ecosystem Health Committee were made aware of this important study, along with its results and implications, there has already been some impact (although none was reported to me or to IDRC in the final report).<sup>24</sup>

This is one of a sizable list of interventions that have been introduced through phase one research activities, but for which no systematic intervention plan has been developed or tested. In the list that follows, some of the other project developed “solutions” are presented. Many of them have even gone through an introductory test phase, to gauge preliminary results and community reaction, but virtually all of these “solutions” are still relatively unknown to the general population, and no one has yet worked on a strategy for finding out how, or even if in fact these “solutions” will work within their daily life of this population of people and in this ecosystem.

Some of these solutions include the following:

- a) **Water management technology.** Ranging from simple containment of water sources, to drainage and irrigation systems and the adaptation of a household water filtration system to the Ethiopian context.

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<sup>24</sup> This insight, along with a solid program of intervention should easily attract funding for testing interventions from agencies such as UNICEF, CARE and Save the Children.

- b) **Soil management technology.** Including vertisol plowing and draining technologies, and the reintroduction of traditional terracing techniques to prevent soil erosion and to encourage the build-up of soil quality.
- c) **Household, health and hygiene practices and living patterns.** This category includes insights such as how cattle sleeping in human living spaces increases chances of disease, especially in children; how cooking in the living room is the cause of poor air quality (smoke) which is likely causing or aggravating respiratory diseases; how leaving human fecal matter on the ground close to the house (for the donkeys to eat) is a source of disease for everyone, especially in the rainy season, etc.
- d) **Livestock nutrition and management.** Work was done on “O” tillage, and on the most effective combinations of cropping and grazing for maximum livestock health and nutrition, operating within the given constraints of the seasonal round of health, weather, food security, agricultural production activities and needs, disease patterns, etc.
- e) **Food security.** Similar to the work related to livestock, modeling was done to determine the best combination of farming techniques, crop choices, income generating strategies, and seasonal health and food shortage patterns to determine how (theoretically) to increase farm income tenfold, decrease soil degradation by 20% and still provide adults with an average of 2,000 calories a day, (2,200 – 2,800 is the recommended intake level for those doing regular hard work). Twenty-eight percent of Ginchi households can meet this figure now. The child anthropomorphic study showed that 55% of children under five years were stunted and 23% were severely stunted (Final Technical Report p. 26), which suggests that distribution of food within households is also problematic. If calorie intake of hard working adults falls below 2,000 – 2,200 calories/day farm productivity is likely to be affected, which will in time have both direct and indirect impacts on food security.

7. **Cultural resources** – One of the primary tribal groups in the Ginchi area are the Oromo, who have a concept called “fayyaa”, which means (loosely) “well-being”. With

this concept comes a framework for seeing the relationships (i.e. linkages) between various aspects of well-being (cattle, families, politics, nature, etc.). This type of cultural resource has been used in other societies to help local populations to understand, integrate, internalize, and act upon complex sets of research outcomes and development concepts leading to health and well-being. This cultural resource could serve as a noetic integrator for a community based ecohealth training program or for the development of relevant learning materials.<sup>25</sup>

Again, all of these insights, tools and technologies are only potential “solutions” until they can be further developed through a process of community engagement, testing through intervention, reflection and refinement. This process has also been referred to as the “adaptive management cycle” in integrated natural resource management literature, involving repeated cycles of testing and learning in a process of scaling up innovations (Douthwaite et al, 2001).

It took the entire period of Phase I funding, as well as one-year extension, (in time, not money) for the research team to reach the point where they are ready to engage in full-blown intervention research activities. Unless there is a Phase II, it seems to me that much of the potential impact of this project will be lost.

## **Slow on the Uptake?**

The “Final Technical Report” states that “not many new technologies have been taken to the YLPA community by research and extension for adoption, but among those presented adoption has remained low.” For example, despite positive results in initial testing of those innovations, only 12% of farmers adopted the BBM vertisol management system, 28% used higher yielding crop varieties, and 18% planted multi-purpose trees. In general it was the wealthier households who showed the most interest in the new approach. One of the technologies introduced (cereal/legume intercropping) actually

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<sup>25</sup> See for example Bopp, Michael and Judie Bopp (2001) “Recreating the World, A practical guide to building sustainable community”, Four Worlds Press, Calgary. Part II, pp. 21 – 37.

lowered household food security by 15%. Somehow farmers sensed a problem with this idea, because only 4% tried it.

This initial uptake related data illustrates a number of important questions for intervention research.

1. What are the factors in this population that influence farmers (or anyone else's) decision to take up a new technology or strategy?
2. In general, the poorest are the least able to embrace new technologies (especially if there are new costs involved), the least able to afford to risk time, money, and opportunity costs on an unproven technology, and the most vulnerable to catastrophe if an "experiment" fails. What needs to be done in the Ginchi context to assist the poorest (who are the primary target of this research) to benefit from the research outcomes?
3. Until a technical solution is integrated into the life of the community, we don't really know if it will work. The intercropping technology (cereals and legumes) proved to be a good idea that didn't work in the Ginchi context. Given the almost complete absence of a buffer of resilience in most families in the study area, it is very important that great care is taken to ensure that technologies and strategies that are introduced have been thoroughly tested to be certain they will in fact produce the benefits that were anticipated. During the testing phase, what sort of risk insurance can the project provide to those who stand to lose if something doesn't work, especially for those for whom even a small loss could be catastrophic because they are already living at the margins of basic minimum survival requirements?
4. Some of the important strategies developed by the project, particularly those related to agricultural productivity, are not yet fully developed as an intervention package. For many of the agricultural interventions to work, farmers will also need a more secure land tenure policy in the Ginchi area, as well as access to credit that will enable them to be able to afford to take up new technologies. As well, the intervention package will have to be tailored to plot-specific realities, taking into account soil conditions, water

issues, etc. Although researchers say that local extension workers will be able to do plot analysis, the fact remains that many of the pieces for a full-scale intervention are not yet in place. Who are the stakeholders that must be involved at this stage? How can these intervention issues be addressed?

## **Influence of the Ecohealth Approach**

There is considerable evidence that the ecohealth approach has influenced institutional thinking and has attracted new partners:

- The Department of Public Health at Addis Ababa University have asked for dialogue with ILRI about the potential of integrating agriculture and health into their curriculum;
- ICRI's new (2002) corporate mission statement and goals now strongly reflect an ecohealth approach, and human health has been included as one of the pillars of the ICRI framework. Animal health is now seen as inseparable from human health. This shift has come about directly through the IDRC funded projects and the influence of John McDermott and Don Peden. With Don Peden now serving as Acting Director at ILRI Ethiopia, a proposal has gone to ILRI's board to make ILRI Ethiopia a center of excellence for the integration of agriculture and health.
- The district government (Woreda) in the study area has demonstrated an acceptance of the need to integrate health and agriculture and to see the agro-ecosystem and the social system as an integrated whole. One researcher commented, "Before they only looked at the people, but not their way of life (utensils, houses, household and farming practices, NRM). Now they look at the community's way of living. The agriculture department now sees health as a resource for agricultural production."
- The Metcha Roman Catholic Mission say that they have learned an extraordinary amount from the project. They are especially impressed by the impact of empowering farmers, which has led to the community (for the first time in recent memory) taking responsibility and ownership for its own development.

- CARE International has received a large contract to work in the Anhara (northern Nile) region of Ethiopia. ILRI has been built into their project to work on the integration of agriculture and health using an ecosystem approach. Before exposure to ILRI's project and thinking, they had separate health and agriculture teams planned.
- ILRI Ethiopia has attracted considerable attention for its transdisciplinary approach to development problem solving. Beyond the partnership with CARE, projects are likely related to malaria and agriculture, and a new partnership is emerging between AMREF (African Medical Research Fund), whose new Director General, Dr. Michael Smalley, has committed to working with ILRI to put public health thinking and professionals more solidly into the ecohealth paradigm. Dr. Smalley underscored that in central and east Africa at least, ecohealth is seen (by health professionals not directly working with projects) as being dominated by the agriculture disciplines.
- In part as a result of the Ginchi Project, WHO has seen the value of forming a coalition of agencies to work collectively on health development issues. This new coalition involves WHO, ICIPE,<sup>26</sup> ILRI, and IWMI (International Water Management Institute).
- In a related development, ILRI has been invited to participate on the UN consulting team for Ethiopia, which also involves primary sponsors of the CG system such as the World Bank, as well as FAO and UNDP. This has come about in part due to the integrative perspective ILRI can now bring to the table as a result of the ecohealth perspective, and it certainly presents an opportunity to integrate ecohealth thinking across all developed sectors on a regional level.

In summary, the stage seems to be set for ecohealth to make a very large impact in Ethiopia. A core of professionals in many institutions and agencies have had varying levels of exposure to ecohealth thinking, and some have made “a huge leap” from being agronomists, engineers, economists, etc. to embracing transdisciplinarity, community participants and an ecohealth framework.

While there has already been some impact that has caught the attention of many professionals and agencies, the potential for a very large impact appears to be even greater. The threshold that many are interested in crossing is that which divides research generated technical solutions from the integration of those solutions into the life of an ever-widening set of communities.

## **Recommendations**

The following recommendations are aimed at fostering the maturation of the true potential of the Ginchi Project.

1. It is recommended that IDRC Ecohealth PI invite the Ginchi team to submit a Phase II proposal focused on developing and testing interventions, and scaling them up for wider impact across the Ethiopian highlands and beyond.
2. The process of proposal development should receive coaching and careful scrutiny to ensure that the team knows the requirements expected related to community intervention; that the transdisciplinarity required in intervention research is in fact applied; that the full range of stakeholders and partners needed for success are effectively engaged; and that the clear focus of further developing and adapting technical solutions coming out of the first phase of work is maintained.
3. This new phase will require an even greater emphasis on a participatory action research methodology, in which a community research team works as partners with the technical and scientific team. This requirement should be reflected in the budget, and in the work plan.
4. Capacity building of key stakeholders to play their respective roles will need to be systematically addressed in the second phase. In this regard, capacity development needs to be invested in the implementation of the key intervention strategies for change. If the needed capacities are not developed and invested, the likelihood of sustainable results will be greatly reduced.

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<sup>26</sup> ICIPE is the International Centre for Insect Physiology and Ecology.

Following is a sample monitoring tool which shows how community capacities such as learning and knowledge development, social capital development, accessing and managing resources, participation and empowerment, leadership and organizational capacity and building and maintaining appropriate partnerships can be tracked in terms of the adaptation and utilization in the process of implementing key interventions.

<b>Key Determinants of Ecosystem and Human Health</b>	Water Management								
	Soil Management								
	Household Hygiene Health Practices								
	Livestock Nutrition Management								
	Food Security and Nutrition								
	Agriculture Practice Innovation								
	Income								
	Land Tenure								
	Governance								
	Energy								
	Health Promotion, Disease Prevention, Treatment								
	Forestry								
	Learning and Knowledge Development								
	Social Capital Development								
	Participation and Empowerment								
	Accessing and Managing Resources								
	Leadership and Organizational Capacity								
	Building and Maintaining Appropriate Partnerships								

**Figure 3  
Intervention**

5. Specific goals that should be included in Phase II work are:
- a) translating the characterizations of natural resource endowments, the farming systems, human behaviour and social patterns into community friendly maps, metaphors and explanations, and training community counterparts and local providers in their use;
  - b) developing and training a community research team (compensation for time away from productive activities may be necessary). Sub-teams of men, women and the poorest should be engaged;
  - c) select and assemble an appropriate venue of interventions, and develop a cost and trade-off analysis that can be easily understood by local people;
  - d) develop explicit strategies for testing and scaling up various *sets* of interventions for a variety of sub-environments and situations;
  - e) develop and test (perhaps in 2 – 3 other areas) a plan for scaling up project outcomes to many communities and regions across Ethiopia; and
  - f) develop a working partnership with one or more NGO's that will provide ongoing support to test communities after the research team has completed its work. (It may be important to do some intervention testing in areas this partner is already working.)

## **Final Remarks**

The potential developed by the Ginchi Project during its first phase extends far beyond the Ginchi Watershed. However, unless a Phase II is funded to allow that potential to fully emerge, much of the impact will be lost. I also feel there is an ethical issue which will arise if there is no Phase II, and that is the sense that the ecohealth research project engaged the community, raised expectations, made promises, (we'll help you when you help yourselves) and developed an in-depth and comprehensive understanding of how to greatly reduce human misery in the study area, but then did nothing about it.

Finally, the overall goal of all ecohealth research is the development and testing of viable interventions. We learned from the Transdisciplinarity and Participation Evaluation (2001) that it takes most research projects almost the entire first phase to grasp the full implications of transdisciplinarity and participation, and to adequately map the socio-ecological system in relation to the research problematics. It is not surprising therefore, that this project did not complete its intervention development and testing. The project has demonstrated its ability to learn and adapt in response to constructive evaluation and coaching and I propose that along with reasons linked to the project itself, the long range opportunities presented in Ethiopia at this time to greatly expand the influence of the ecohealth approach argues strongly for a second phase of the Ginchi Watershed Research Project.

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## Case Review No. 3

### **Livestock and Agro-ecosystem Management for Community-based Integrate Malaria Control (East Africa)**

*(IDRC Project No. 100482)*

#### **Background**<sup>27</sup>

Worldwide, it is estimated that there are some 300 – 500 million people who become sick with malaria each year, and about two million die of the disease. Malaria accounts for some thirty percent of all out-patient visits to health facilities in Kenya. Currently in Kenya, between seventy-five and one hundred children die each day from the disease (usually cerebral malaria), and another fourteen thousand require hospitalization. Kenya is now considered (by WHO) to be the “epicenter” of cloriquine resistance in Africa. The Government of Kenya is actively committed to the WHO “Roll Back Malaria Program,” and this work in part involves a search for new solutions.

A working group of Kenyan researchers and Ministry of Health partners approached IDRC with the idea of exploring the concept of zooprophyllaxis<sup>28</sup> in relation to malaria control in a government irrigated rice scheme. It is of course well known that the presence of standing water increases breeding opportunities for mosquitoes. The Mwea Irrigated Rice Scheme involves controlled flooding of thousands of hectares of low-land areas for at least six months of the year. It seemed no surprise that the incidence of malaria in this area of Kenya is extremely high in comparison to most other areas of the country.

The International Centre for Insect Physiology and Ecology (ICIPE) and a joint WHO/FAO/UNEP/UNCHS panel of experts invited IDRC to participate in a proposal review conference in Nairobi in February of 1999. As a result of these deliberations, the original proposal was broadened from a disease vector focus to include a more holistic

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<sup>27</sup> This introduction section was adapted from Bopp (2001), *Transdisciplinarity and Participation: an Evaluation of Transdisciplinarity and Participatory Aspects of the IDRC Ecosystem Approaches to Human Health Project Initiative*.

<sup>28</sup> The term “zooprophyllaxis” refers to the practice of using animals, in this case cattle, as a bait to attract Anopheles mosquitoes (the type that carry malaria), because Anopheles Arabiensis prefers to take blood meals from cattle rather than from people. Since Anopheles mosquitoes only bite at night, keeping cattle in or very near the house while people are sleeping has been shown to reduce the incidence of malaria transmission in some Asian countries.

inquiry into the structure and dynamics of both the ecosystem and the social system that are giving rise to high levels of malaria transmission. In essence, the focus of the project shifted to an agro-ecosystem health approach. “In Africa’s high risk malaria areas, farming practices can be both the cause of an increase in the disease and an avenue through which it can be reduced” (Mutero et al 2002, p2). This broadened framework of inquiry fit well into IDRC’s Ecosystem Approaches to Human Health Program Initiative and the Project was approved and funded in July 2000.

The Project, as approved, involves research on intensified agro-ecosystems and malaria control in irrigated rice schemes in Kenya. Three critical components of food security, malaria control and ecosystem (including water) management are integral to the Project. A primary long-term goal of the Project was to identify and develop interventions related to “spatial management of natural resources and household and village level infrastructure” (IDRC Project approval document) and how such strategies can “empower local people to address a range of problematic health issues, particularly malaria” (Ibid.).

## **The Partners and their Disciplines**

The Project drew together a broad range of partners, including the International Centre for Insect Physiology and Ecology (ICIPE), the Kenyan Government’s Ministries for Health, Agriculture and Environment, the Kenyan Agricultural Research Institute, the Kenyan Medical Research Institute, the Kenyan National Irrigation Board, the University of Nairobi, and Windrock International, an NGO that specializes in participatory approaches to grassroots development.

## **The Research Plan**

During the research proposal review process, it was decided to begin the research with a first phase (twenty-four months) that concentrates on characterizing the agro-ecosystem, the relevant social systems (particularly related to health conditions), and trying to understand the dynamics that are leading to and supporting high levels of malaria transmission. To this end, a number of parallel studies were undertaken. These included:

1. A study related to Anopheles mosquito control, including testing zooprophylaxis in combination with other known strategies;
2. A health, nutrition and health conditions study;
3. A farming systems (agriculture and livestock) study (involving livelihood, production and management dimensions);
4. A stakeholder analysis related to the Mwea Rice Scheme (including farmer groups, cooperatives and Scheme management and service agencies, etc.); and
5. A social and economic study related to livelihood, gender and well-being.

As the project was in its initial planning stages, it experienced an evaluation review mission focused on transdisciplinarity and participation (see footnote 27, p. 63). At least in part due to feedback and coaching resulting from that evaluation, those separate studies, which were planned as parallel inquiries, each with its own internal logic and distinct methodology, were reconceptualized as a set of overlapping activities. As well, a much greater importance was placed on community participation, which in turn led to reorienting important aspects of the inquiry to involve local stakeholders, including community members.

This modification in approach is important for purposes of this evaluation study, which focuses on interventions and impacts because insofar as local stakeholders were engaged in various aspects of the research process, the initial stages of community intervention have already begun, and there have been impacts.

## **Expected Research Outputs and Results**

The research team anticipated a program that would operate in two phases. Phase I (as outlined above) would concentrate on trying to characterize the social and agro-ecosystem dynamics that are giving rise to high levels of malaria in the area within and surrounding the Mwea rice scheme. Phase II would focus on developing and testing interventions. Specific outputs and results anticipated for this phase are as follows:

1. The identification of common health problems in the Mwea rice irrigation scheme, their relative importance to the community, and the underlying environmental and social risk factors.
2. The characterization of local agricultural production systems along with an analysis of their limitations and opportunities in relation to the improvement of human health and household income.
3. Identification and an assessment of the socio-economic feasibility of various agro-ecosystem interventions for reduction of malaria and other health risks; and
4. Dissemination of research results to specific target audiences, including the stakeholder communities.

*(Adapted from Mutero et al 2002, p. 4)*

## **Current Status of the Project**

This first phase of work has been completed, including a final stakeholder's workshop held in the study area to both refine and disseminate results (in late May 2002). Two academic papers have been prepared in draft form (Mutero et al 2002, and Kabutha et al 2002). At the time of my visit, the final report had not yet been drafted.

This work was accomplished in five stages.

### ***Stage I***

**Stakeholder consultative meetings** – in which community stakeholders from in and around the Mwea rice scheme, as well as government and NGO stakeholders who work in the area were engaged in analysis and consultation about common health and development problems, constraints to good health and well-being, and a preliminary identification of possible interventions. This group contributed significantly to the selection of four study communities, a poor and a wealthy irrigated community (i.e. living directly adjacent to irrigated rice fields) and a poor and wealthy non-irrigated community (i.e. located near the rice scheme area but not adjacent to irrigated fields). The four villages selected, (Mbui Njeru, Clagani, Kagio and Murinduko) were considered by community stakeholders and

the research team to be representative of the range of living conditions within the rice scheme area.

### ***Stage II***

**Participating village level needs assessment.** A battery of Participatory Rural Appraisal (PRA) tools were used including village and area mapping, transect walks, timelines, seasonal calendars, wealth ranking, ranking of problems and issues with a particular focus on health, well-being and natural resource management, natural resource mapping, social mapping and institutional analysis.

Special attention was given to gender analysis related to division of labour, access to, control over, and benefits derived from resources, and overall decision making patterns exercise.

### ***Stage III***

**Household and community diagnosis.** Based on data collected in the first two phases, household surveys were administered to 65% of the households (randomly selected) in each of the study villages. This survey focused on household demographics, household income, a range of socio-economic indicators, health issues and constraints, livestock, cropping and farming system practices, and environmental health indicators including water (and water availability), housing and sanitation.

### ***Stage IV***

**Technical studies: entomological and parasitological evaluation.** Sampling of adult mosquitoes from ten houses in each study village (counting indoor resting mosquitoes killed with pyrethrum spray over a seven month period) was carried out. Mosquitoes filled with blood were tested to determine if the blood meal was taken from humans or cattle. Preliminary findings indicate that *Anopheles Arabiensis*, the malaria carrying variety of mosquito that is common in the study area, actually prefer to take their blood meals from cattle over human beings.

Finger prick blood samples were then collected from children ages 0 – 9 for all four villages in order to provide estimates of malaria prevalence.

## *Stage V*

**Data analysis, stakeholder workshops and dissemination.** During this stage, discipline-based team members worked together to refine a transdisciplinarity analysis that addresses the core research problematic and Phase I goals. This analysis, and the raw data results from the community studies were presented and vetted during a four day stakeholder workshop held in the study area. This event culminated in a half day presentation for area political leaders, technical workers from the department of agriculture, health, local government and the Mwea rice management board, as well as community stakeholders and guests in which the important outcomes of the study were presented by representatives of various community stakeholder groups. Community action plans were also outlined which describe how stakeholder groups plan to address immediate priority issues selected for community action.

## **Outcomes**

Dr. Clifford Mutero, the research team leader, summed up the findings to date related to malaria in Mwea as follows:

*There is no scarcity of knowledge and methods about how to eliminate malaria in many parts of Africa. What stands in the way is poverty and apathy.*

On the surface of the malaria problem in Mwea, it would seem that a combination of technical solutions such as insecticide, impregnated bed nets, pyrethrum cattle strips, window screens, community education and making treatment accessible would solve the problem. And it might well, *if* the community could even begin to approach the level of capacity required to afford and sustain such solutions.

In their mapping of the situation, the research team was able to uncover a very familiar causal web of factors that influence malaria prevalence in Mwea. Following is only one part of the web, gleaned from analysis provided by various community level players at the final (Phase I) stakeholder meeting.

A long standing conflict between the farmers union and the managers of the irrigation scheme has led to a withdrawal of services to farmers by the government, which has in turn led to a general deterioration of the entire production system, including infrastructure (such as canals and roads, the availability of adequate farming inputs, quality seeds, fertilizers, etc.), all of which has in turn led to a very major reduction in production and therefore, in farmer income. This in turn has led to a significant increase in household poverty, which has impacted food security, and accessibility to health inputs such as malaria medicine and bed nets. The lack of clean drinking water (which is endemic to the area) combined with poor nutrition and the inaccessibility of health services all contribute to a general susceptibility of most residents to disease, which leads to generally weakened capacity for agricultural production. Dysfunctional social behaviour such as addictions and domestic violence leads to an even greater increase in the vulnerability of households (and especially children) to the impacts of malnutrition and ill health.

It is in this (partially painted) context that technical solutions to the problem of malaria will have to be implemented, and it is precisely because the real world of Mwea rice farmers and their families is complex, multi-faceted, and not easily changed that the research team needed to carefully map the situation before attempting to test technical solutions.

The *outcomes* of Phase I of the research can be summarized as follows:

1. A map of the agro-ecosystem dynamics has been completed related to links with poverty and malaria.
2. A rough first level map of the social system has been completed, with a focus at the household level.
3. A series of component studies were completed as follows:
  - health status and nutrition study;
  - mosquito control study;
  - malaria prevalence studies;
  - farming systems studies;

- stakeholder analysis of the socio-economic – health dynamics and conditions;
  - a livelihood focused social and economic dynamics study; and
  - gender analysis, related to household economics, decision making, health behaviours and socio-economic status.
4. A comprehensive array of technical solutions related to the research problematic were identified. Following is a partial list.
- a) raising soybeans in the non-rice growing season to increase income;
  - b) water purification technology – such as sand filters;
  - c) water management interventions to regulate the seasonal flow at the scheme level;
  - d) livestock “revolving” program with “0” grazing based on use of rice husk feed;
  - e) social development interventions at household and community level to address issues such as domestic violence, alcoholism, youth crime, and women’s capacity building;
  - f) capacity building of the Farmers Union;
  - g) policy intervention to address land tenure issues of people living in or near the scheme;
  - h) a farmers school aimed at improving agricultural productivity and profits;
  - i) specific anti-malarial technologies such as bed nets, pyrethrum strips on cattle, availability of malaria treatment medication and community education; and
  - j) biological agents to control mosquitoes, especially at the breeding stage.
5. A variety of important stakeholders were engaged at the level of households, village organizations, farmers union, local government, the National Irrigation Board, and a variety of academic and research institutions including the University of Nairobi, ILRI and ICIPE.
6. A ten-member community research team was assembled, oriented, trained, and is now thoroughly grounded in the analysis of the research problematic at the community level. This group is more than capable (as demonstrated during the final stakeholder

meeting) of articulating the goals, issues, findings and challenges of the project to their fellow community members, and to any level of professional worker seeking to understand the dynamics of the Mwea life-world related to agriculture and malaria.

7. A considerable reservoir of trust and good will was established between the research team and community as well as government stakeholders, which bodes well for second phase collaboration toward the development of effective and sustainable interventions.
8. A group of highly capable discipline-based researchers become a transdisciplinary team, have internalized the ecohealth research paradigm and are committed to continuing the work.
9. This same team has learned a great deal about a participatory approach, is completely convinced of its indispensability to their work, and is committed to its continuance.
10. The research team has produced three papers for publication, and has organized and carried out a dissemination conference for community, local government and other stakeholders.

## **Evaluation Interventions and Impacts**

An *intervention* in ecohealth research<sup>29</sup> is the process of integrating solutions (to health and natural resources management challenges) within the socio-ecological context that has generated the research problematic. In other words, solutions have to be woven into the pattern of daily life in such a way that they can be sustained from within the system. A “solution” in this context is an answer to some aspect of the research problem that has been developed (or discovered) by researchers and their partners. It is difficult to predict if a “solution” will be effective or sustainable until it has been tested extensively in the specific socio-ecological context in which it is intended to be implemented.

Once an intervention has been tested, its *impact* can be determined (or at least anticipated). An impact is a change in the socio-ecological context and conditions that has occurred as a result of research activities. It is important to bear in mind that some aspects

of community based research (such as community participatory engagement) are in and of themselves a kind of intervention, in that they increase community awareness, build capacity and collective will to address issues, and often lead to the community (or parts therein) taking action on its own to address various aspects of “the problem” as they see it.

What has happened thus far in the Mwea project most certainly fulfills the objectives set out by the project team for the first phase of operation. The socio-ecological characteristics and dynamics related to the research problem have been studied and mapped, relevant stakeholders have been identified, and many of them have been engaged, and a comprehensive range of possible interventions have been identified for testing.

The principle finding of Phase I work is that no matter what interventions are introduced, they will only work if they are integrated into a comprehensive program of sustainable development that addresses poverty, living conditions, and the legal and policy environment now influencing the lives of Mwea people. This is obviously an important insight, with important ramifications for the second phase of research. There is, however, another critical dimension of the problematic which has not been directly addressed in any of the research teams activities or recent documentation, and that is the ongoing conflict between farmers who live and work in the rice scheme and the government of Kenya, represented primarily in the leadership and management of the National Irrigation Board.

The researchers have essentially concluded that malaria cannot be delinked from poverty, and hence strategies to address malaria in Mwea need to be integrated into a comprehensive program of social and economic development. From my brief visits to the project area, conversations with community stakeholders, government officers, and Irrigation Board employees and researchers, it seems obvious to me that poverty is worsening in the Mwea area *because* the very life of the entire rice scheme (upon which so many people depend for their livelihood) is being choked out of it by the government’s withdrawal of services to farmers in the area, a withdrawal which seems to have been intentionally carried out to force the farmers to knuckle under to the terms and conditions scheme managers wish to impose. Farmers Union officials say that before 1998 when the

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<sup>29</sup> Please note that some version of this basic definition discussion is repeated in all three case reviews for the benefit of those who will read only one particular case.

conflict began, thousands of dollars in profits were being stolen from the farmers by corrupt officials, and the scheme was operating with rules that made farmer well-being and prosperity unattainable. “We were like slaves to the scheme”, one of them remarked. “Now those who were reaping the benefits off the backs of farmers are bitten. The gravy train has stopped. So they (the government and scheme managers) stopped helping farmers.” Scheme managers argue that farmers refuse their help. While the truth probably lies somewhere in the middle, the facts remain that:

1. The rice scheme is deteriorating: productivity is down to one third of what it was in good years. Canals and roads are in disrepair. Seed quality is declining. The local rice mill (60% farmer owned) has been closed for several years.
2. Farmers do need technical assistance and capacity-building to bring the scheme up to its full productive potential.
3. So, really, the farmers and the scheme managers need each other.
4. Meanwhile, poverty is deepening in the Mwea area, and with it, malnutrition, disease, and social problems are proliferating.
5. In this context, any sustainable development initiative will have to *directly* address the conflict, and help to resolve it.

There are signs that the Mwea Phase I project has already contributed to the creation of common ground upon which a solution could be built. The final (Phase I) stakeholder meeting had representatives of the government, the National Irrigation Board, the communities in and around the scheme, and the Farmers Union, all in the same room. This is progress, but there is more. After the stakeholder meeting in May 2002, one of the managers of the National Irrigation Board remarked: “Now I see why farmers fight us. We never consult them.” The obvious participatory approach taken by the research team generated an atmosphere of practical dialogue and problem solving that was very attractive to players on all sides of the conflict.

Several of the research team members hinted to me that they had avoided addressing the conflict head-on because it may be too dangerous to bring out in the open. It seems to me that the research team need only follow the lead of community

stakeholders, and support them in articulating their issues and concerns. At the same time the team has already won the trust and cooperation of Natural Irrigation Board (NIB) officials, who would dearly love to find viable solutions to the conflict that would allow the scheme to be put back on a profitable footing. In any case, this conflict is endemic to the research problematic. It cannot be ignored if the interventions developed by the research team and community partners are ever to have their desired impact.

I have referred to this problem (i.e. the conflict) as “the elephant in the living room”, a metaphor used in the addictions field to refer to the really big problem everybody sees, walks around and avoids, but nobody talks about. I propose that Phase II research should place this problem in the center of the inquiry process, and use it as a lever to engage all relevant stakeholders in joint efforts to build sustainable solutions.

## **Stakeholder Engagement**

### **Community Level**

The research team was very careful to involve a representative team of community researchers in the inquiry and dissemination process. It was a truly moving experience to witness the confidence and pride with which community representatives spoke at the May 2002 stakeholder meeting in Mwea, sharing their analysis of the problems and their ideas about solutions. This group of men and women

1. had been part of the knowledge creation process and clearly felt identified with it;
2. had internalized a fairly sophisticated and multi-faceted analysis of the agro-ecosystem and social patterns that converged to result in a downward spiraling pattern of ill-health;
3. had identified (in consultation with residents of the four study villages) the principle health and development priorities from the community’s point of view (they are #1, clean water and #2 malaria); and
4. were obviously committed to a long-term process of engaging the wider community and appropriate partners in solution-building work.

## **NIB / Government Level**

The research team has been working closely with NIB staff since the earliest days of the project, and it seems clear, given NIB's active participation in the stakeholder meetings, and the tone of their comments during private interviews, that they too feel connected to the project, and hopeful that the project will somehow contribute to the resolution of longstanding issues that divide farmers and NIB. The NIB area managers comment ("Now I see why the farmers fight us, we never consult them") is an indicator that the methods the research project employed, and the results that emerged were eye opening to NIB officials. All of this bodes well for Phase II collaboration, *if* the issue of the conflict is addressed openly and systematically.

## **The Farmers Union**

The Farmers Union was present and involved at various stages of the data gathering and feedback process, but I feel<sup>30</sup> they can be engaged as much more direct and active partners during Phase II, which would contribute to their capacity development, and would also set the stage for the development of collaborative solution-building exercises between the farmers and the NIB. The research team (with its members based in various academic and research institutions) carries within it a kind of unofficial authority that both community members (including farmers union representatives) and NIB officials clearly recognize and respect. It seems to me that the Farmers Union is a major stakeholder that will have to be a part of any solution building that will be sustainable in Mwea.

## **Influence of the Ecohealth Approach**

The Mwea project has contributed to the penetration of the ecohealth approach into the thinking and institutional practices of the region in which it operates in at least three ways.

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<sup>30</sup> Based on discussions with several of their board members.

The research team itself began as a disparate group of disciplinary specialists that did not really understand transdisciplinarity or participation, and were not inclined to either. Dr. Lucy Kabuage, one of the team members articulated her experience as follows:

*The fact is that we, as team members, had always worked in lecture theatres and laboratories, but we never worked in the community. This project has added a new and important dimension to our lives.*

This team has *learned* its way into a completely different understanding, based on systematic efforts to understand the socio-economic realities of the Mwea area, and also on courageous efforts to utilize participatory tools and approaches. Gradually, the real benefits of transdisciplinarity collaboration began to appear as team members helped each other both to make their separate, discipline-based studies stronger and to develop cross-cutting insights and solutions that could not really be attributed to any one of the separate studies. Team leader Clifford Mutero remarked:

*The effect on all of us of the socio-economic and participatory mapping work was critical. Had we not done it that way, we could never have seen the true complexity of the situation.*

This team is both ready and committed to continue its ecohealth work together in a Phase II project.

### **Institutions Impacted**

- a) Research team members reported that their colleagues in university faculties watched, at first with skepticism, but then with growing fascination and interest as the research team began to produce results that were not only academically verifiable and useful, but were also connected to a process that will eventually translate the results of research into viable life changing interventions for the people of the study area (tangible academic outputs of Phase I included four masters thesis, and a variety of published papers).
- b) Research team members stressed that as research institute and university colleagues watched team members (including graduate students) produce reliable research results utilizing transdisciplinary and participatory approaches (something some argued could

not be done, given the separate worlds of the various participating disciplines) the entire ecohealth approach gradually gained credibility.

- c) A third and important factor which has raised the profile of the ecohealth approach is the SIMA (System wide Initiative on Malaria and Agriculture) research program, which was born as a direct result of the reshaping of the Mwea project at the initial IDRC training workshop which gave the project its real shape and direction. Driven by the vision and passion of Clifford Mutero, SIMA is a joint initiative within the CGIAR system of IWMI (International Water Management Institute). ICIPE (the International Center for Insect Physiology and Ecology) and ILRI (the International Livestock Research Institute). A proposal development workshop was jointly sponsored by SIMA and IDRC Ecohealth in late May 2002 for research teams based in eastern and southern Africa. Teams from South Africa, Mozambique, Uganda, Zimbabwe and Kenya participated, which means, in practice, that some of the strongest researchers in fields related to agro-ecosystems health in these five countries are now thoroughly grounded in the IDRC Ecohealth Approach.

## **Important Lessons Learned in Phase I**

Some of the lessons that emerged from Phase I research were summarized by Mutero et al (2002) as follows:

1. Three reasons why there have been so many failures in addressing malaria in the past, despite the known links between cattle, malaria and irrigation are:
  - a) the failure to understand and engage the socio-economic dimension in solution building;
  - b) the complete lack of people's participation in the research and implementation efforts; and
  - c) the fact that the real world problematic of malaria is far too complex for any but a transdisciplinarity approach. (p.21)

2. While there are many possible interventions to address malaria, more of them will work alone. They must be introduced as a set of mutually reinforcing strategies that address health conditions (poverty, malnutrition, etc.), health behaviours, natural resource management and public policy. (p.21).

## **Challenges for Phase II**

The overall research plan for the Mwea project called for two phases of work, the first focused on mapping the socio-ecological context and the research problem dynamics, and the second focused on intervention. There is no doubt in my mind that this team is ready and very able to undertake a Phase II research program as they originally proposed. Related to that next phase of work, however, I feel it is important to raise the following issues:

### **1. Team Leadership**

Dr. Clifford Mutero has provided both the inspiration and the glue which has helped the research team to achieve what it has. His recent move to take up a position with IWMI in South Africa will mean that he will not be able to provide the day to day, hands-on guidance he has provided in the past. In reviewing this problem with the whole team, it is clear to me (and to every team member with the possible exception of Dr. Mutero himself) that none on the team can play the role Clifford Mutero now plays. He is a respected scientist, an able diplomat and a talented transdisciplinary leader. He has earned the respect of the most conservative sectors of the medical and scientific community, and he has demonstrated a remarkable openness and affinity to participatory approaches.

Even if Dr. Mutero is only able to spend time with the team on a quarterly basis, his continued involvement will greatly increase the potential for a successful second phase of research, a phase that will be required depending on the trust and relationship building that was cultivated by the team in Phase I under the careful guidance of Dr. Mutero.

## **2. The Conflict as Entry Point**

This research project represents an opportunity to create constructive common ground that could lead to the eventual resolution of the ongoing conflict between Mwea farmers and the NIB. Since the conflict is one of the critical constraining factors related to poverty, and therefore to malaria in Mwea, it seems to be that no interventions have much of a chance of working unless they are introduced in the context that is moving beyond the present impasse.

For this reason, I recommend that the research team focus one of its primary lines of action in Phase II on understanding all sides and dimensions of the conflict, and on helping key stakeholders to develop sustainable solutions.

## **3. The Farmers Union as a Partner**

Along with the NIB, I recommend that the project also establish a working partnership with the Farmers Union and work through them to develop interventions and test solutions. There may be other civil society groups (such as local NGOs) that should also be brought into the circle of partners, but it will be important, in any case, to ensure that *both* government service providers and various elements of civil society are engaged in working toward sustainable development and health in Mwea.

## **4. More Social Research**

Although a reasonable start was made in mapping the social world of Mwea people (including its economic and gender dimensions), there is still a great deal that is not known. I recommend that a development-oriented social scientist with extensive experience in qualitative and quantitative methodology (including participatory approaches) be added to the team for Phase II to focus on rounding out this picture. Currently the only team member with social science expertise is Charity Kabutha. Her leadership in participatory approaches has proven to be invaluable, but she is still a lone voice on the team presenting a social science perspective.

## **5. Sustainable Development as a Context for Research**

Intervention research, which will be the focus of Phase II work in Mwea, is not merely the testing of technical solutions. Mutero et al (2002) have clearly identified that for interventions to work in Mwea, they will need to be integrated into a comprehensive program of sustainable development. Into what process of sustainable development will the intervention research be integrated? It seems to me a significant portion of Phase II work must entail working with some development promoting organizational partner (probably an NGO) to build capacity for just such a process.

The ten-person research team would make a good core interventions team, but they will need sustained technical assistance and leadership. A budget for a local field coordinator, local (part time) salaries for these members, as well as resources for sustained training and technical assistance will need to be built into Phase II planning.

Whether a sustainable development program has to be created, or can simply be built upon will depend on what is already there. It appears to me, however, that something will need to be built. If that is the case, then it will be very important to situate the new organization (or project) in such a way that all sectors of the community and all stakeholders in the Mwea area will be able to work with it.

## **PART III: SYNTHESIS OF GENERALIZABLE FINDINGS AND RECOMMENDATIONS**

### **INTRODUCTION**

This section will draw on the lessons that surfaced through these separate evaluation studies (Uganda, Ethiopia and Kenya) to discuss a list of general findings and recommendations related to the issue of interventions and impacts for Ecosystem Approaches to Human Health Research.

One of the most challenging aspects of ecohealth research is this: ecohealth research is generally not satisfied with the output of scientists as “outcomes”. An “outcome” in ecohealth research has to lead to a real solution to a problem related to human health and natural resource management.

Thus, the typical ecohealth research problematic really goes well beyond any one discipline, and even beyond the operations of normal science, into living processes of communities, and the dynamics of a wide range of stakeholders that influence what goes on in the study area.

A group of scientists can develop what they believe to be a “solution” to a problem, but until that solution has been tested fairly extensively in the life-world for which it was intended, it is usually difficult to predict its effectiveness. Often what appears to be a perfectly reasonable “solution” within the logical framework of the research team will not in fact translate into a viable solution within the logic and reality framework of community stakeholders and the organizations and institutions that influence their lives in ecohealth research.

Fundamentally then, an “**impact**” is a change in the socio-ecological context and conditions that give rise to the research problem, and which has occurred as a result of research activities. Not all impacts are significant (in terms of the research problematic) nor are all impacts good, or even intended. Some impacts have a delayed or indirect significance that can only be measured under certain conditions (e.g. community learning may not be visible until the learning is applied; the true impact of a community drainage system is seen during the rainy season; the impact of water filters on health may only be

seen when other related factors are also addressed, such as how water is handled after filtration, etc.).<sup>31</sup>

In ecohealth research an “**intervention**” is the process of implementing solutions deemed to be effective in addressing some aspects of a human health and natural resource management problem *within the socio-ecological context that has given rise to the problem*.

It is instructive to note that in all three of the projects reviewed for this study, researchers anticipate (eventually) handing over the implementation of solutions to others, and most predominantly, to the communities whose health is the focus of the research. Whether the implementer is a government agency, NGO’s or communities themselves, what this means is that the technical solutions devised by scientific teams must be integrated into the ways of living and working that now exist within the web of relationships that comprise the research problematic.

Herein lies the nub of the challenge inherent in intervention oriented research. It is precisely that “web of relationships” as they now exist that are making it possible for the research problematic to exist. In order to solve the problems that are the focus of ecohealth research, that “web of relationships” within households, between community members, between human beings and the ecosystem upon which they depend, and between communities and the institutions and organizations that influence their lives, etc.) will have to change.

In other words, very often it’s the “fox guarding the hen house” type of problem. The system that is producing the problem set is being asked to implement “transformative” solutions. Factors such as current ways of thinking, ways of doing things, ways of prioritizing and valuing that guide choice-making, and current patterns of power distribution across the social system collude to create and perpetuate the problem-set as it is now. For a new pattern to gain a foothold within the system will require that change (probably stimulated by capacity development, and often requiring a reorientation of goals and values) will need to take place.

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<sup>31</sup> This section on definition was repeated, in some form, in all three of the sub studies because of its fundamental importance to the discussion.

So hidden within the concept of “intervention” in ecohealth research is the idea of systems transformation. Essentially, the socio-ecological *system* as it now exists is producing a set of conditions and outcomes that are unsustainable for people and/or the natural world. When this situation is made the centre of ecohealth research, the conditions and dynamics of the system (social, agro-ecological, etc.) are mapped, and the key determinants that must be addressed in order to improve human health are identified. This work is what the Ecohealth PI is now referring to as Stage I research.

As the bridge is crossed from Stage I to Stage II, i.e. from situation analysis and solutions/identification to designing and testing interventions the ground shifts upon which the process proceeds from a platform of relatively straightforward inquiry, to a landscape of relatively messy experimentation.

Donald Schön puts it this way:

*In the varied topography of professional practice, there is a high, hard ground overlooking a swamp. On the high ground, manageable problems lend themselves to solution through the application of research-based theory and technique. In the swampy lowland, messy, confusing problems defy technical solution. The irony of this situation is that the problems of the high ground tend to be relatively unimportant to individuals or society at large, however great their technical interest may be, while in the swamp lie the problems of greatest human concern. The practitioner must choose. Shall he remain on the high ground where he can solve relatively unimportant problems according to prevailing standards of rigor, or shall he descend to the swamps of important problems and non-rigorous inquiry? (Schön 1987:3)*

Ann Bernard (1990) echoes this theme in describing the problematic results of a reliance on science based technology for development interventions:

*Intervention theory has to a large extent been based on the assumption that technological innovation would, by virtue of its scientific merit alone, persuade adoption and use... It has also been expected that the beneficial results of successful pilot projects and model cases would produce inevitable and extended “trickle down” improvement. The expectation has not been realized. Results have in many cases been in fact the reverse, leading instead to new problems of social dislocation, ecological disequilibrium and wider rich-poor dichotomies. (pg. 25)*

The ecohealth research paradigm has in fact anticipated this transition into the “swampy lowland” of real-world complexity in several ways. First, it insists on the

utilization of a participatory approach, even in the first phase of work. Second, it explicitly requires research goals related to the testing of interventions. At the same time, the IDRC ecohealth program team has worked very hard to retain a continuous learning dynamic, forcing itself to confront difficult issues and challenges as a matter of course. The full-blown approach to development research that the ecohealth team is pioneering is unfolding as this work progresses. I say this as a prelude to the following:

*In my view, the full implication of what is really entailed in testing interventions in ecohealth research was not well understood by the PI team, let alone by most of the research teams that received funding under the program during the first 4 – 5 years of the program operation.*

The following set of observations and recommendations are intended to shed light on this very challenging path.

## **Observations and Recommendations**

### **1. Intervention is a development process, and needs to be addressed as such.**

Intervention means weaving solution building processes and technologies into the ongoing life of the socio-ecological system. Only system insiders can really do this (with research team support of course) and very often when they try to do it, there will be obstacles. Changing human thinking and behaviour is not easy, and that is what is entailed in implementing many types of interventions. Finding the technical solutions is the easy part. Sometimes vested interests are challenged. Sometimes people within the system lack the knowledge and understanding required to see the sense of the proposed solution. Sometimes people lack the extra energy it requires to stay alive *and* to contribute to the introduction of a technical and social innovation. And so it goes. The possibilities of what can go wrong are numerous indeed. But human systems do change and adapt. That is the one thing that is consistent about them.

The science and the art of guiding and supporting human system change is just as much a “discipline” (to be included in a transdisciplinary research team) as is epidemiology, hydrology, anthropology, agronomy or any other specializations.

### ***Recommendation No. 1***

It is recommended that all ecohealth research teams be required to include a development intervention specialist as a part of every transdisciplinary team.

## **2. Place ecohealth research within the context of ongoing development programs.**

Intervention research takes place in the lives and communities of real people. Whatever else results from the process, it is critical that a primary focus be kept on ensuring that the people in the study area experience real benefits as a result of their participation in the study.

But it takes time to reach the point where benefits are experienced, as well as considerable knowledge and skills.

All three of the projects reviewed for this study are occurring in areas where there is no comprehensive development program that is ongoing. What this then requires of researchers is that, in order to test interventions, they will need to create a development process within which they can test the technical solutions they have devised.

A research team cannot (in addition to its research mission), also take on the role of promoting sustainable social and economic development, if for no other reason than the fact that development processes will take 5 – 7 years to mature and research funds are limited. Nevertheless, all three projects are clearly planning to work *through* local populations to bring about the changes required to address their research problematics.

The only viable answer to this problem (that I can see) is that ecohealth research programs should occur in partnership with an NGO or other development-promoting agency.

### ***Recommendation No. 2***

That, in Phase II research (for already funded projects), and from the beginning with new projects, research teams be required to integrate their projects into the context of ongoing development work, and/or to work with an NGO partner which will commit to supporting a process of sustainable social and economic development in the study area that will continue for at least two years after the research phase has been completed.

## **3. The expectation of impacts**

The expectation that seems to be forced on research institutions all over the world is that there should be development related impacts and results to show for the money that the institutions receive. This is one expectation that is not likely to disappear. Nor do I think it should. What does need to be addressed however, are the time-frame expectations. What is now emerging as a result of the ecohealth's Phase I experience is an understanding that:

- a) Research projects need to be phased, such that the expected outcomes of Phase I is a primary understanding of the problem and possible solutions, from Phase II should come a clear understanding of how to integrate solutions into the life world of the study area, and (possibly) from Phase III, how to scale-up the findings of the first two phases across a much larger population in a diverse range of settings.
- b) Secondly, this type of research requires a participatory methodology not merely as one component, but as a central line of action, which involves beneficiaries and stakeholders in all phases of the work. This is because the nature of the problems to be solved require an inside-out dynamic. Participatory methodology is related to the issue of time-frame because research teams cannot always control the pace and flow of research processes if they are truly participatory (and if they are not, the intervention may well fail). More significantly, (as the Ugandan and Kenyan case have clearly demonstrated), participatory inquiry is also a type of intervention, and these are impacts that result from that intervention. The question is, which impacts will be valued by researchers and their funders?

In both the Ugandan and Kenyan cases (and to a lesser extent in Ethiopia) we have seen that the impact of creating a community counterpart research team has led to at least three types of impacts; (i) new knowledge was created that would likely not have been if insiders had not been engaged; (ii) a core group of community stakeholders *learned* a great deal, about the environment and development conditions, but also about how to approach development problem solving; (iii) in all of these cases community stakeholders were activated and mobilized, and a significant shift took place from passive acceptance of intolerable conditions to active engagement in solution building.

From a sustainable development perspective, these are important impacts, and their emergence will be critical for the success of future stages of the research. From a research perspective, the key problems being researched (malaria and poverty, trypanosomosis and poverty and agricultural practices and poverty) were not “solved”. Important steps were taken (this is after all, Phase I in all three cases), but more steps are needed. Certainly from an evaluators perspective, all three projects have done well, and are moving at a reasonable pace toward their research objectives, which are very likely to produce significant development outcomes for their target population. A child that plants a garden may try to force her carrots to grow faster by shouting at them. But carrots grow in their own time. An experienced gardener knows what her plants need: how much water, fertilizer, protection from the elements, etc. She also knows roughly what the normal stages of growth are, and when to expect a harvest,

Development research cannot operate completely divorced from the context of development itself, and expect to be effective. Development is an organic process that unfolds in its own time. Experienced practitioners can usually predict, once they understand a particular situation, roughly what to expect both in terms of time required and likely obstacles that will need to be addressed. The problem seems to be that there is a general lack of knowledge and understanding about participatory development at the decision making level in the institutions that fund development research.

It is important to bear in mind that the ecohealth approach is not simply seeking academically justifiable research results. It is seeking pathways to sustainable change in the real world. It is only there that the *impacts* of research can truly be measured and weighed. Unfortunately, the real world is a messy place.

- c) Thirdly, the integration of research into ongoing processes of development means that the impacts may only mature after a constellation of other related factors also mature, such as community capacity, the marshaling of resources, etc.

### ***Recommendation No. 3***

That the ecohealth team commission a literature and practice review focused on how long sustainable human systems change usually takes (in various categories of settings) and what is really involved in moving from a technical solution to a viable intervention.

It is recommended that the results of this review be used to systematically educate funded research teams as well as funders and research managers about the importance of taking the necessary time to focus on the problem of moving from a technical solution to a viable intervention.

#### **4. Tough, complex and seemingly intractable problems can be addressed through an ecohealth approach.**

As an evaluator, I have had the opportunity to review eight ecohealth projects in depth, and to become familiar with the research problematic of each.<sup>32</sup> None of these projects (or dozens of others for which I have reviewed the project documentation) have taken on neat, clean, straightforward problems. They are all complex, messy and extremely unsuitable for reduction to a few clear cut questions and answers. And yet, through the judicious weave of research inquiry and intervention oriented participatory engagement, researchers and their partners within each of these problem sets are in fact making very remarkable progress toward solving the problems they set out to address.

In the case of the Mwea project, researchers are now saying malaria will not be defeated in Mwea until poverty is addressed. As we all know, poverty is not an easy target. It is elusive, stubborn and complex to address, but it is impossible to ignore the research link between disease and poverty that has been made over and over again by researchers around the world (and it was made in all three cases addressed in this study). What is so interesting in all three of these cases is the presence of a sophisticated analysis of what needs to be transformed in order to shift the poverty and disease patterns that now prevail into something more sustainable for human life and for the ecosystems upon which human beings depend.

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<sup>32</sup> The Ugandan, Ethiopian, and Kenyan projects reviewed in this study, as well as a pesticide and potatoes project, a gold mining and toxicity problem and a flora culture project, all in Ecuador, as well as an urban water project and an urban poverty and integrated health project in Cuba.

#### ***Recommendation No. 4***

It seems to me that the Ecohealth Phase I in particular, and IDRC (as a development research institution) in general would be well served to develop an ongoing dialogue with funders on (i) the nature of impacts in development research; and (ii) the natural timelines and flow of knowledge development in intervention oriented research.

#### **5. From intervention testing to scaling-up**

The Ecosystem Approach to Human Health Research paradigm has built-in objectives that focus the research on the testing of viable interventions within the socio-ecological context that gave rise to the research problematic. *I am now convinced that this objective does not go far enough, and that a further stage of research needs to be added to the model.*

I am referring to the problem of scaling-up tested solutions into development strategies that effectively reach whole populations and bio-regions. The problem of scaling-up is not simply a development implementation task (although that is almost always part of work). Solutions that have been developed and tested in a particular study area will have worked precisely because the process of intervention research indigenized the solution within a particular socio-ecological context. Simply because a solution works in one place does not mean it will necessarily work in all others, even if conditions seem to be (on the surface) relatively similar. A whole new range and set of challenges must be addressed, such as the following:

- the capacity of intermediary institutions to understand the technical solution, and to effectively engage local stakeholders in intervention testing and indigenization programs;
- the availability of funding to take all the necessary steps and ensure all the components (in a cluster of components that comprise a strategy) are in fact implemented;
- the efficient use of economies of scale relative to a network of appropriate partners willing and able to take up the task of “scaling-up”;

- effectively addressing local knowledge and conditions, and incorporating these into the process in many micro-environments;
- effective communication across many organizations and systems of the complexity and details of the strategy; and
- capital available to community level people to assist in taking up research outputs (Hainsworth and Eden-Green, Ed (2000)).

Because of these and many other similar factors, scaling-up is a researchable problem that (when appropriate) needs to be incorporated into the Ecosystem Approach, in order to maximize research impact.

### ***Recommendation No. 5***

It is recommended that beyond intervention research, an additional dimension related to scaling-up research results across large populations and many regions be added to the ecohealth research agenda.

### **6. Where is the boundary between research and development?**

One of the features of this study is the explanation of the highly permeable boundary (within an ecohealth research framework) between research activities and development implementation. It is my observation (see Ethiopia Case, p.48) that it is not the job of a research project to carry out long-range interventions. It is however (in my view) the role of ecohealth project teams to identify who those actors are and to translate research outcomes into strategies and tools that those actors can use. This will almost always require collaborative work between stakeholders and the research team. If this bridging work is not done, it is often the case that research outputs are simply not implemented across a population that would truly benefit if they were.

### **7. Capacity Building**

Very often ecohealth programs are developing solutions that depend on community driven implementation processes. It was clear from field visits to all three projects (Uganda, Ethiopia, Kenya), that a great deal was being expected (or hoped) from those rural African communities for which they are not now well prepared. Factors such as

leadership, management of programs and resources, the capacity to develop and work from a community vision and plan, and the ability to engage community members in constructive and sustained participatory development processes are examples of capacities for which systematic learning programs will be needed.<sup>33</sup>

Institutional capacity is also a critical issue. Very often researchers hope to hand over their technical solutions to institutional partners (whether government or NGO), when in fact local institutions do not have the capacity to do what is expected of them.

For these reasons, the intervention phase of research will often require capacity building for those potential partners who will be expected to carry the primary load of intervention testing. For communities, this will often need to focus on the basics of sustainable community development, for it is within that context that most ground level interventions are most likely to be effective.

## **8. The influence of the ecohealth approach**

The Ecosystem Approach to Human Health Research Initiative at IDRC is at the leading edge of a newly emerging field in development research. It is not, however, the only player in the field. A number of important initiatives are moving in very similar directions. DFID'S livelihood model, the fields of natural resources management, population health promotion's determinants of health approach, the University of Guelph's ecohealth work and the Resilience Alliance (see Folke et al 2002) are clear examples of paradigmatic and strategic approaches with many similarities to the IDRC Ecohealth Approach. All of these approaches utilize an wholistic, integrative way of seeing problems, which includes the integration of social, environmental, and policy factors on health, human well being, prosperity, and natural resource management.

It is my observation that many of these approaches (including IDRC's ecohealth research approach) have a tendency to work along their own tracks, without a great deal of dialogue (especially about fundamental assumptions, definitions, models and methods) between them.

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<sup>33</sup> Adapted from the Uganda Case, p.30.

The world conference on Sustainable Development (recently completed in Johannesburg) provided an opportunity for a new beginning for such dialogues. I am convinced that the Ecosystem Approach to Human Health Research Initiative could make invaluable contributions to some of the other key global initiatives, and could in turn benefit and grow as a result of learning from these other approaches. I propose that the time has come to systematically foster just such a sustained dialogue.

There is no doubt that, even in Phase I of the research work, the ecohealth approach has had a remarkable influence on an ever-widening circle of professionals and institutions who have touched the projects in Uganda, Ethiopia, and Kenya. Individual research team members experienced a transformation of their approach to research - particularly related to gender, participation and transdisciplinary – all representing very new approaches to nearly all research team members.

These researchers in turn have gradually influenced their departments and institutions. There are definite signs of changes afoot at the University of Nairobi (which will now offer a new Masters program related (in part) to agriculture and human health). Institutions that were strictly focused on “hard” and narrowly scoped research (such as ICIPE and ICRI) are now shifting toward putting human beings in the picture of their research agenda and priorities. ILRI is now considering a proposal to make its center in Ethiopia a “Centre of Excellence” for research that links agriculture and human health. And in Ethiopia, ILRI has been brought into an inner circle of international NGO’s and donors to collaborate on country level development strategies *largely because of* the integrated scheme of thought that ILRI is able to bring to the table because of what it has learned from immersion in the ecohealth approach.

What is particularly promising about the IDRC ecohealth initiatives is its faithfulness to the path of continuous learning and growth. From my review of the literature related to this study, the issues related to impact, and the translating of technical solutions into viable interventions are at the cutting edge of the field, as is the problem of building effective bridges between research-born solutions and scaled-up development interventions.

In order to even more effectively expand the influence of the IDRC ecohealth approach, I offer the following recommendations.

***Recommendation No. 6***

It is recommended that the Ecohealth PI establish a number of working partnerships with very carefully selected development funding and implementing organizations (such as CARE International and DFID) to facilitate the integration of research activities (particularly Phase II and III) into development practice.

***Recommendation No. 7***

It is recommended that the Ecohealth PI initiate a sustained dialogue with key persons at the centre of other models and approaches that are similar in scope, orientation and intent to the Ecohealth Approach, with an explicit purpose of learning from each other, in order that all approaches may flourish and grow. In my view, this strategy will greatly increase the influence of IDRC's ecohealth work.

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**APPENDIX A**

**GUIDING QUESTIONS**



## Guiding Questions

1. What tools and methods have been or are being developed or modified and integrated into Consultative Group (CG) research projects mentioned in (a) above?
2. What interventions have been tested or are likely to be tested?
3. Were these interventions appropriated and accepted by local communities?
4. Were relevant government agencies receptive to adopting enabling policies for health?
5. How long has it been or will it be until interventions can be tested in communities with community participation? What factors affect a community's willingness to test interventions? and
6. If tested, are these interventions considered cost-effective?



**APPENDIX B**

**LIST OF INDIVIDUALS CONSULTED**



## **Personnel Interviewed**

### ***Uganda***

Winnifred Musoke – *Field R Coordinator*

Annah Muja Rutebuka – *FITCA field worker/researcher*

Dr. Charles Otim – *Director LIRI Livestock Health Research Institute, Tororo*

Bugwera Community Actions Committee (3 members of 6)

Martin Jackson – *Health worker, Tororo District*

David Oketcho – *Health Assistant, Tororo District*

James Dawson Myoma – *Deputy Head Master, Chairman of Local Health Committee, Bugwera*

Dr. John McDermott – *Principle Researcher, ILRI – Nairobi*

### ***Ethiopia***

Dr. Don Peden – *Acting Director and IDRC Project Manager ILIRI, Ethiopia*

Mr. Abuja Asthathi – *Research Team Member, SLRI, Ethiopia*

Dr. Michael Smalley – *Director General, African Medical and Research Foundation (AMREF)*

Four of eight members of the Ginchi Community Core Group

### ***Kenya***

Dr. Clifford Mutero, IMWI – *Research Team Leader*

Charity Kabutha – *Gender and participatory development consultant to the team*

Dr. Violet Kimani – *Team member (University of Nairobi)*

Dr. Lucy Kabuage – *Team member (University of Nairobi)*

Dr. George Gitau – *Team member*

Dr. Joseph Ssenyonga – *Team member (ICIPE)*

Dr. John Githure – *Team member (Minister of Health)*

Dr. Lawrence Muthami – *Team member*

Angela Kaida – *Team member*

Lucy Musyoka – *Team member*

Elijah Kiarie – *Graduate student*

Martin Oganda – *Graduate student*

Anthony Waneru – *Scheme manager, Mwea Rice Growers Multipurpose Cooperative (MRGMC)*

Francis Mucttune – *Director, MRGMC*

Four members of Mwea Community Research Team

