RURAL ECONOMY

Using Participatory Research Methods in Economic Research

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participate in the learning process.

I. Introduction

Participatory research is primarily a methodological approach which attempts to formalise the reciprocal interaction between an agency and target communities. Methods such as Participatory Rural Appraisal (PRA) have gained wide acceptance with rural development agencies as part of the planning process for development projects. According to Chambers (1994), the critical feature of the PRA approach is that the professionals relinquish control and let local people explain the needs and aspirations of the community. Accumulated experience and evidence suggests that participatory research can greatly increase the effectiveness of dollars spent on development initiatives (Kottak 1985, Carter 1996). The potential for gains in cost-effectiveness may explain the wide diffusion of participatory approaches, from capacity building within large public institutions (Thompson 1995), to public policy reform in developed countries in areas such as health care (McWilliam 1997) and education (Weatherly and Lipsky 1977) that can be observed.

Given the widespread use of participatory methods, it is interesting to consider why these methods are not commonly employed in applied economic research. It may well be that the practice of classical statistical analysis of stating a hypothesis and testing this hypothesis lead the researcher to assume that the community cannot or should not be involved in the development of the research questions. In this paper, we call this assumption into question, examine how the community can influence the direction of a research project and how this leads to an improvement in the overall quality of the questions and the information that can be gathered. This line of inquiry then leads us to question the distinctions made between participatory approaches and other interactive appraisal approaches such as Rapid Rural Appraisal (RRA). The distinction appears largely artificial and based on an arbitrary line drawn between policy based research and implementation.

A case study is used to examine the power of the Participatory Research Method (PRM) in developing research questions and formal hypotheses. The primary research interest revolves around the choice behaviour of the agricultural household. By examining the choices of the household, much is revealed concerning the economic value of household labour as well as the products from the environment. As this paper is intended for audience with an interest in the social sciences, it is necessary to begin with a description of the stylised agricultural household from economic theory. The next step is to examine the results of a series of exercises undertaken during

a week of community meetings. Each exercise was useful for paring down the questions to only those relevant to both the researcher and the community. While participatory approaches are usually associated with the planning and implementation stages of development projects rather than theoretical modelling and formal hypothesis testing, there is a significant role for participatory research in selecting research questions and designing working hypotheses.

II. Participatory Research

Participatory research reflects a paradigm shift in decision making, from decisions rooted in centralised and bureaucratic institutional structures to decisions that reflect local social and environmental conditions. This is a response to growing evidence that successful policy depends on how individuals and communities respond to incentives, which in turn depends on their local context and aspirations. Policy based research into appropriate farming technology in southern Africa reveals that time constraints of men and women in the household were often critical factors in the successful implementation or adoption of a technology (Low 1986). Researchers have also started to acknowledge the wealth of knowledge residing within the rural societies of developing countries. Researchers interested in biodiversity have recently turned to the indigenous knowledge of farmers who have acquired generations of traditional knowledge and incorporated this knowledge into their survival strategies (Zweifel 1997).

Participatory research is also a response to limited budgets available for gathering data and providing support for policy implementation (Thompson 1995). PRM combines methods for eliciting information with an activist agenda for community empowerment. As such the key difference between PRA and other research approaches is in the process. Chambers (1994) illustrates the difference between PRA and RRA on a process continuum, the main distinguishing variables being: mode of information collection (extractive vs. sharing); outsider's role (investigator vs. facilitator); information ownership and analysis (outsiders vs. local people); and methods used to collect information.

The main difference between PRA and non-participatory approaches according to Chambers (1994) is the elimination of hierarchy in the relationship between the researcher and the community. However, this ignores the mutual dependence both between communities and outsiders as well as between investigators and facilitators. In other words, in order to implement effective

policy, agencies and researchers may be required to move back and forth on the "process continuum" and perform different roles. An example situation from Molnar (1989) illustrates how local people can take a dominant position in the planning process and force their views by "stonewalling" the efforts of visiting development teams until aspects of a project were revised. Alternatively, the outside agency or researcher has the ability to reach a wider audience and communicate the needs and aspirations of the community. In this way, co-operation between the outside agency or researcher and the community is important for both sides. The key feature of participatory research approach lies within the quality of information exchanged rather than the direction of flow and the incorporation of local knowledge into the policy sphere, either at a research or implementation level.

It can be argued that RRA and PRA are in fact a large subset of the participatory methods where the defining characteristic of the methodology is the reciprocal rather than hierarchical relationship between researchers and a community. Therefore, at any given time, either the researcher or the community may be in the dominant position and the distinction between PRA and RRA is meaningless (as is Chambers' process spectrum).

Participatory methods hold considerable promise for policy based economic research. Applied researchers are well aware that numerous complications arise in the research when unknown or unexpected features of the local socio-economic landscape turn out be critical factors in the economic relationships being considered. However, time and funding constraints rarely permit an in-depth investigation of the historical and cultural context of the study site. Participatory methods show considerable promise as a cost effective means of investigating the relevance or appropriateness of the original research question for a series of potential study sites. While the exercises used as part of a participatory approach add another stage to the research process, the researcher receives early indications concerning the potential need to revise the research question or to change study sites.

In applied economic research, PRM is unlikely to replace household surveys as a collection tool. In order to be able to test hypotheses, it is necessary to collect suitable sets of data. However, incorporating PRM techniques in the research strategy represents a significant improvement over standard methodologies where the researcher develops a questionnaire and contact with the community begins with the pre-testing and implementation of the questionnaire. In

academic research, where the purpose of the research is to investigate the appropriateness of a given hypothesis, the researcher needs to maintain a fair degree of control but as this report will demonstrate, there is considerable room for revising questions or investigating other issues which the researcher may not have considered.

The usefulness of PRM in applied economic research will be demonstrated by analysing patterns of resource use, identifying potential sources of conflict, and solving practical field level problems such as developing a sampling frame or developing and refining a questionnaire for an applied research problem in firewood collection. A series of village meetings were held in the Nyamuganhu ward of the Mutoko communal area in Zimbabwe during the period of July 9 - 12, 1996. The purpose of these meetings was to become familiar with the area, gather baseline information about the firewood collection patterns and income generating activities and to discuss the research project. The information gathered over the course of these meetings was used to reshape the research questions and to develop a questionnaire. The meetings were instrumental in helping the researcher develop a more general understanding of the local economy of the area and the daily activities of the people in this ward. The meetings were organised around the concepts of participatory rural appraisal (PRA) and rapid rural appraisal (RRA). In a relaxed atmosphere, a series of exercises such as mapping the area and various matrix exercises were completed to illustrate the historical changes in natural resources of the area.

III. A Case Study

The case study is based on the information collected during a series of community meetings held July 9-12, 1996 in the Nyamuganhu Ward, Mutoko North Communal Area of Zimbabwe. A map of Zimbabwe highlighting the location of Mutoko North and a map of the wards within the communal area can be found in Appendix I.[1] The Nyamuganhu Ward proved to be a good research site for exploring questions regarding the decision-making behaviour of rural households. People were willing to participate in community meetings, answer numerous questions in key informant interviews and generally were able to provide the researchers with a good sense of which questions would be of mutual interest.

Research Questions

The rural agricultural household utilises the available resources from their immediate

[1] Permission to conduct research was sought from Chief Nyamakope, the elected councillor for the ward Mr. Roosevelt Chiwayi, and from each the village headmen (sebhuku). There is a strong commitment to education in this ward. When the researcher and assistants explained the connection to the University of Zimbabwe and our interest in the environment, the local leaders were very supportive of the project. Since other research initiatives had been conducted in this Communal Area, the local people understood that a development project was not being planned.

landscape and incorporates the availability of these resources into its household decision making process. Theoretical models of the rural agricultural households are well established in the literature and for a technical treatment of the household production model see Singh (1986). The central feature of this model is that rural household is both a consumer and a producer of products. The rural household grows a staple agricultural crop and the surplus above and beyond the subsistence needs of the household is sold for cash income. The household may also engage in the production of other goods for household consumption or to generate income. The household, in attempting to maximise utility or overall satisfaction of the household, has the labour of the household members to allocate to various tasks. For example, female members of the household are often responsible for the preparation of food, child-care and the collection of firewood. The household production model is able to summarise the demand relationships for all the goods and services that could be produced or purchased by the household. Researchers such as Cavendish (1997) have started to use these demand relationships to explore the connections between the environment and household poverty. In this study our interest was in the possibilities of modelling the resource allocation decisions of environmental products.

Markets for goods and services in rural developing countries are known to often be thin or non-existent due to non-availability of the good or insufficient demand. Consider the example of firewood. If there are no rules which prohibit the sale wood collected, the household considers the price of other options for domestic energy versus the cost of the household collecting or purchasing the wood. One of the research problems to be considered is whether firewood collection should be treated as a discrete choice problem (collect or not collect from a site) or if firewood and many of the other goods (such as baskets, knitted goods) can be expressed and estimated as a market demand relationship. The participatory exercises will provide critical information on potential types of data that could be collected and which research questions are worth exploring.

A series of community exercises were used to identify the products that could be obtained from various sites in the landscape, to identify the current stock of the raw material resources, and to tie this in with sources of income. This information and subsequent discussions with the community were crucial for determining which product or products from the landscape were worthwhile focussing upon in a later household survey.[2]

[2] See the Rural Economy Staff Paper by Hatton MacDonald, Adamowicz and Luckert for the next stage of the research project which focused on the choice behaviour of households concerning firewood.

Community Mapping Exercise

As part of a PRA, group mapping exercises can be used as a tool to focus on any number of aspects of the physical or socio-economic environment. In this case, developing an understanding of how people were utilising the mountains was of primary interest due to the abundance of resources and importance to the people living in the area. The maps show where each household is located relative to the mountains and other important landmarks of the area. The maps also served as a sampling frame for the household surveys that followed.

In order to allow women's voices and perspectives to be heard, it would have been ideal to have separate groups of men, women and even children to prepare maps of the area. The Hot Springs Working Group used this approach and found that different groups drew maps containing very different elements reflecting the differences in the tasks and interests of the groups. However, it was not possible to organise groups of only men and only women from each village due to the under-representation from some villages. In an effort to overcome potential barriers to full participation by women in a mixed gender setting, the facilitators for these meetings were asked to encourage the women to take the initiative in drawing the map on the sandy soil and filling in the cards with household names. This meant placing drawing sticks for drawing in the hands of women and encouraging the active participation of women in the discussions that followed.

In Appendix II, the reproductions of maps drawn by the people of Dzvengwe, Nyamakope I and Nyamakope II (DNN) can be found. In Appendix III, the maps of Gondo, Katiyo-Muropa, Rinomhota and Katiyo-Chikiwimbisa (GKMRKC) can be found. The maps were drawn on the ground by the people in each village. The names of households were put on cards and placed on the map according to relative location. Significant landmarks, such as the mountains and streams were also identified. Once the group was satisfied with the map, a process of semi-structured interviewing was used to elicit information about the products from the surrounding physical environment.

The mapping exercises presented here highlight the need for cross-verification of information.[3] The maps drawn on the first day of the week of PRA meetings were missing a

[3] By cross-verification, we mean asking for the same information through different sources or through different types of PRA exercises. In the case of the maps, prior to the meetings being held, information

significant number of households. It was never clear why this happened. However, one of the meeting facilitators was asked to consult with the people in these villages and fill in the missing households. This problem did not occur with the last three villages.

An accurate sampling frame could be developed as a result of the mapping exercise and cross verification of the number of households. In developing countries, standard sources of information such as census information, voting lists, telephone directories are either not appropriate or not readily available. The mapping exercise is a direct approach that serves a number of other purposes. It is an exercise that requires few materials and it quickly establishes who the experts are, the local people, on the environment and landscape.

Products from the Environment

Tables 1 and 2 list the products or uses of the significant landmarks from the areas surrounding DNN and GKMRKC villages. It is clear from the extensive listing that the mountains represent a significant natural resource and that the mountains provide a number of products for these villages. The product matrix can be used as a basis point for queries about resource use, property rights and sources of conflict. For instance, when we asked about firewood we found that the rules were clearly defined and that everyone was aware of the rules. Wood is relatively plentiful on almost all the mountains. Households could freely collect dry wood anywhere in the ward with the exception of the areas around streams or the homestead of another household. It was unacceptable to cut live trees, especially fruit bearing species and there were strong prohibitions on the sale of firewood. Households caught breaking these rules had to appear before the chief's court.

There was little evidence of major resource conflicts amongst households. Minor resource conflicts tend to centre on cattle grazing and gardens but these issues were resolved through the existing social structure and institutions. Conflicts between mining interests and the community are likely to occur in the future due to the granite mining at Chijakata Mountain which was slowly levelling the mountain. Reclamation of the site would be far into the future, if ever. As of the time of the community meetings, no areas or sites have been closed to collection. This is an important distinction between the Mutoko study site and other communal areas in Zimbabwe where firewood can be quite scarce. In other areas, households were restricted to a few specific collection sites[4]

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about the number of households in each village, cash generating activities, resources of the area, etc. had

and were fined if caught collecting wood in prohibited areas.

Key information was elicited through these discussions. The prohibition on selling firewood meant that the economic decisions surrounding this essential good were reduced from whether to buy or to collect wood to a choice of where to collect. Further, it became apparent from the discussions that wood was of great importance to women. A common interest between the researchers and the community had been found.

Table 1

Significant Landmarks and Resources

Dzvengwe, Nyamakope I and Nyamakope II

Significant Landmark	Product or Uses
Vhumbika Mountain	firewood, poles, mushrooms, amenities such as swimming pools, cave paintings, sacred place i.e. ancestral burial sites, wild animals (leopards, baboons, monkeys)
Sororo River	fish, water for animals, water for bathing, water for dip tank
Dzvengwe Gardens	tomatoes, shallots, sugar cane, bananas, sweet potatoes, rice, beans
Karunzviru Mountain	firewood, grazing area, wild fruits, wild animals (hyenas, leopards, baboons, monkeys)
Nyadzvore Stream	drinking water, grazing area
Gonye Mountain	firewood, grazing area, honey, wild animals (rock rabbits, guinea fowl, hyenas, leopards, baboons, monkeys)
Fusuro Stream	grazing area, water for animals, wild fruits
Chidziro Mountain	firewood, mushrooms, thatching grass, stones for house construction (foundation), grazing area, wild animals
Chidinye Hill	firewood, mushrooms, wild animals
Nyatsanga Hill	firewood, grazing area, area for grinding sorghum, stones for house construction
Mashayamvura Mountain	firewood, honey, wild fruits, thatching grass, wild animals (baboons, monkeys, leopards, snakes, rock rabbits)
Mudenyika Stream	Source of water for domestic purposes (laundry), drinking water for animals, water for moulding bricks
Marirangwe Mountain	firewood, honey, fibre, wild fruits, thatching grass, wild animals
Suswe Mountain	firewood, fibre, mushrooms, wild animals (rock rabbits, baboons, monkeys)
Umba Mountain	firewood, grazing area, wild animals (rock rabbits, baboons, monkeys)
Ndigamarombe Mountain	firewood, fibre, mushrooms, grazing area, wild fruits, stones for house construction

been collected through key interviews with the headman (and their families) for each village.

[4]This is a personal observation as the result of discussions with Peps Muswaka, a research assistant on this project, in the Dandara study site in the Murewa Communal Area.

Mukangiranyemba Mountain	firewood, grazing area, wild fruits, wild animals
Hova Hill	firewood, poles, grazing area, mushrooms
Nyahowe River	fish, animals, wild fruits (berries and baobab)

Table 2
Significant Landmarks and Resources
Katiyo - Muropa, Katiyo-Chakiwimbisa, Gondo and Rinomhota Villages

Significant Landmark	Product or Uses
Tawani Mountain	Firewood, thatching grass, drinking water (springs and pools), mushrooms, wild animals (rock rabbits, baboons, monkeys, hyenas)
Ruware (elevated flat rock surface)	area used for cleaning millet and sorghum area sometimes used for the kresh
Gum Tree Plantation	poles and roofing materials
Mumuyu (Baobab tree)	local meeting place, leaves of the baobab used as a vegetable, baobab provides fruits, tree can provide fibre for thatching
Goto Stream	wild fruits are harvested along this stream
Chidziro Mountain	Firewood, mushrooms
Chidinye Hill	Firewood, mushrooms, some fruits, stone for house foundations
Chitora River	wild fruits are harvested along this river, fish, worms (for fishing), provides water for gardens and domestic purposes
Fusuro River	water for domestic purposes (washing)
Garireremkoso Mountain	wild fruits, firewood, mushrooms, wild animals (baboons and monkeys)
Mashayamvura Mountain	firewood
Mbudziyatume Mountain	firewood
Rukwiza Mountain	thatching grass, firewood
Chipangare Mountain	firewood, materials for grinding sorghum
Marirangwe Mountain	firewood, wild animals (leopards, rock rabbits, rock bucks, hyenas)
Chijakata Mountain	granite mining, firewood, mushrooms, wild animals (rock rabbits, rock bucks, hyenas)

Changes in the Stock of Resources

A simple matrix exercise was used to elicit views on how the important resources of the area had been changing over time. It was important to establish, for this exercise, dates that are important for people in the area in order to look at changes in the stock of resources over time. Independence in 1980 was named as an important year. The beginning of each decade was selected a marker in time with the except of 1962 which was suggested by one of the older women at the first village meeting as being the earliest point in time that could be remembered.

The exercise was explained by the facilitators and a matrix drawn on the ground. Villagers were given a pile of sticks to use to illustrate the relative abundance of each resource and the results are summarised in Tables 3 and 4. Reading down the columns, the number of sticks

represents the perceived relative abundance of the resources at different points in time. The percentage change has been calculated and placed in parentheses in Tables 3 and 4. Where

there are large changes over time, the people were asked about what happened to the resource. For instance, the availability of mushrooms varies considerably over time and it was explained that mushrooms depend on rainfall. Years 1970 and 1990 were identified as being dry years and 1980 and 1996 were years when there were good rains. Both groups perceived there to be an overall decline in the abundance of wild animals. GKMRKC villages perceived the changes to be more pronounced, particularly between 1962-1970 and between 1980-1990. With firewood, the largest change in absolute terms occurred between 1962 and 1970. During this time, there was an increase in the demand for firewood and construction materials with the increase in population in the area.

Table 3

Historical Resource Matrix
Katiyo - Muropa, Katiyo - Chakiwimbisa, Gondo and Rinomhota Villages

Point in Time	Firewood (huni)	Mushrooms (howa)	Animals (mhunka)	Fibre (Hodzi)
1962	15	6	14	7
1970	5 (-67%)	4 (-33%)	7 (-50%)	5 (-29%)
1980 Independence	6 (20%)	7 (75%)	6 (-14%)	7 (40.0%)
1990	2 (-67%)	2 (-71%)	2 (-67%)	3 (-57%)
1996	2 (0%)	9 (350%)	1 (-50%)	8 (167%)
Total Number of Sticks Used	30	28	29	30

Table 4
Historical Resource Matrix
Nyamakope I, Nyamakope II and Dzvengwe Villages

Point in Time	Firewood (huni)*	Mushrooms (howa)	Animals (mhunka)	Wild Fruits (huti)
1962	20	4	5	8
1970	10 (-50%)	2 (-50%)	5 (0%)	4 (-50%)
1980 Independence	9 (-10%)	4 (100%)	4 (-20%)	3 (-25%)
1990	8 (-11.1%)	1 (-75%)	3 (-25%)	2 (-33.3%)
1996	6 (-25%)	5 (500%)	2 (-33.3%)	2 (0%)

Total of Sticks	53	16	19	19

* The abundance and changes in the availability of firewood and fibre were said to be the same.

The perceptions of the two groups of villages differ with respect to the availability of fibre. GKMRKC villages perceived there to be a large increase in the availability of fibre in recent years with the introduction of nails and asbestos roofing replacing traditional methods of construction with fibre whereas DNN villages thought there had been a overall decline in the availability of fibre with the cutting of trees. DNN villages were asked to consider the availability of wild fruits after it was decided that the firewood and fibre availability could be shown together in one column of the matrix. The overall decline in the availability of wild fruits was said to be due to the cutting of trees, population increases with subsequent land clearing and the neglect of the trees.

The group discussions highlight that the stock of renewable resources such as firewood, fibre and animals are thought to have diminished over time. The collection of these products takes time where households are implicitly making trade-offs in terms of the resources that could be devoted to any particular task. For the purposes of collecting information on time spent walking to gather wood, each trip would be an event that women would easily recall and describe. It is not clear that the percentage changes from these tables can be interpreted as any more than directions of trends. There may be a form of "end-point" bias that occurs with these matrix exercises. As sticks are distributed across the boxes of the matrix, there tends to be few sticks left to allocate to particular years, often the last period. For example, firewood was thought to have decreased significantly between 1962-1970 and then again between 1980-1990. However, it is not clear that people were asserting that the stock of firewood dropped proportionately by two-thirds in each instance, if the decrease between 1962-1970 was the largest absolute change (10 stick decrease) or if the decreases in both instances should be interpreted as large and no attempt should be made to compare the relative changes.

Firewood Collection Sites

Women in each of the villages were asked to explain about the importance of the various mountains surrounding their villages as places to collect wood. The women were given a pile of sticks to distribute amongst the various collection sites. Usually determining the appropriate number of sticks was a co-operative effort involving much discussion with several women becoming involved in distributing the sticks until a consensus was reached concerning the

distribution. The final results are summarised in Table 5. Through this exercise, it became apparent that the women were collecting wood at a number of different sites and that choosing a site was based on a variety of factors with distance being a major consideration.

Table 5

Women's Firewood Collection Patterns by Village

Collection Site	**Number of Sticks**	**Percentage** (by Village)
Gondo Village		
Tawani Mtn	13	43.3%
Garireremakoso Mtn	4	13.3%
Mashayamvura Mtn	6	20%
Chipangare Mtn	1	3.3%
Rukwiza Mtn	6	20%
Katiyo - Muropa		
Chidinye Tsvimo Hill	3	10%
Tawani Mtn	8	26.7%
Chidiziro Mtn	19	63.3%
Dzvengwe		
Gonye Mtn	13	44.8%
Mashayamvura Mtn	0	0%
Ndigamarombe Mtn	4	13.8%
Vhumbika Mtn	8	27.6%
Nyatsanza Mtn	1	3.4%
Chidziro Mtn	1	3.4%
Karunzviru Mtn	1	3.4%
Chidinye Hill	1	3.4%
Nyamakope I & II		
Mukangiranyemba Mtn	1	4%
Vhumbika Mtn	0	0
Hova Hill	3	12%
Umba Mtn	4	16%
Suswe Mtn	7	28%
Ruchera Hill	0	0%
Chidziro Mtn	5	20%
Marirangwe Mtn	10	40%

As part of a general discussion, it was found that both men and women are involved in firewood collection throughout the year though women are primarily responsible for this task. There are considerable differences in the way men and women approach this task. Men tend to use scotch-carts during the dry season to collect large loads of wet or dry wood, collecting whichever species is available. The wood that men collect might be used for domestic purposes or for special purposes such as beer brewing or brick burning. As well, there may also be a need for large

quantities of wood due to special gathering such as funerals. Women generally tend to gather wood for day to day domestic purposes. Women will often walk several times a week to well wooded areas and collect dry wood where possible. When asked about species of trees, women showed a distinct preference for muunze, munhondo and mupfuti. These species are all hard woods which provide good coals and little smoke.

From this discussion, it was apparent that women went to a variety of sites to collect wood. There appeared to be some differences in the attributes of the sites in terms of the types of wood available as well as considerable variation in the distances that would have to be travelled to each site. As a result, there was some potential for attempting to model the choice of collection sites based on the attributes of the sites such as distance and availability of different types of wood.

Seasonal Calendar of Activities

As part of developing a better understanding of rural life, people were asked to explain what activities they are busy with at different times during the year. Almost all households grow maize which is the main crop, supplying the family with food through the year. The maize crop is planted in anticipation of the rains. Households are extremely busy with planting and harvesting. Women will often try to stock-pile firewood before planting or the harvest to lessen the burden of firewood collection during these times of the year.

Many households also have gardens located around a continuous source of water (a stream, pond or spring). Gardens are important source of food and an important source of income for many households. The garden is maintained throughout the year, though relatively more time is spent in the gardens during the dry season. As can be seen in Table 6, the gardens are neglected in April (harvest), October and November (planting).

When asked about wild fruits, it was made clear that there are wild fruits available throughout the year. People were able to provide a list of when various fruits ripen. Mushrooms, however, are very seasonal and can be found during and for a time after the rainy season.

Through discussions concerning the seasonal availability of wild fruits and the seasonal calendar of activities, it became clear that a study of market demand for indigenous products would require data collection activities throughout the calendar year. Time and funding constraints would

not permit this type of data collection. As well, the time constraints of local people during harvest and planting season would make data collection difficult during certain periods of the year.

Table 6

Seasonal Activities

	Activity			
Month	Growing Maize	Working in Gardens	Collecting Wild Fruits	Gathering Mushrooms
January		**********	hutee	*********
February		**********	nzvanzvura	*********
March		**********	nhengeri	*********
April	**********	neglect	matunduru	
May		**********	manzviru	
June		**********	nhunguru	
July		**********	munjero tsitsviriondo	
August		**********	matamba nhunguru	
September		**********	mbumi	
October	**********	neglect	hacha mbumi	
November	**********	neglect	mazhanje	
December		*********	matufu	********

Sources of Cash Income

When gathered as a group, men and women were asked about the various sources of cash income and the results are summarised in Table 7. Growing maize is an important source of income as well as providing the staple food which sustains the family. However, agriculture is a seasonal activity and there are times throughout the year, especially July and August, when household members are able to engage in other activities.

Table 7

Women's and Men's Cash Generating Activities

Men's Activities	**Women's Activities**
Agriculture (ploughing)	agriculture (planting)
Garden	gardens

making door frames, axe handles	sewing
making sleeping mats	making peanut butter
keeping poultry	growing dry crops (beans)
Brewing beer	brewing beer
keeping animals	making clay pots
Moulding bricks	crocheting

Agriculture, gardens and beer brewing were listed by both men and women as sources of cash income. With respect to maize crops, there are some differences in the tasks assigned to men and women. Women said they were responsible for planting and men were said to be responsible for ploughing. Female headed households, will hire men to do the ploughing, manage to get help from relatives or engage in the ploughing themselves.

When the women were asked about how they spend the money they earn, the women indicated that the money either went back into the household for groceries, school fees, clothing, building new houses and the provision of household equipment or into money earning projects such as seeds for the garden, beer brewing materials, nuts for peanut butter, chickens, or fertilisers for crops. Control of the cash income generated by women depended in large part to the family dynamics. In some households, women controlled their cash income exclusively while other households tended to pool income and negotiate how the money is to be used. However, even within households that supposedly pooled their income, some women did say that "if the father didn't know about the money", the money was not shared though they made it clear that the money was used for necessary goods such as uniforms for school or school fees.

Range Of Income

As part of a group discussion, people were asked to describe the assets and cash income of a poor family and a rich family. In the rural economy, staple foods are grown, firewood and other products from the mountains are collected and generally many of the necessities are provided through the efforts of the household or the extended family. However, cash income is required to provide those things which the household cannot provide for itself.

A poor household was described in terms of what it did not have. A poor household was said to be:

without a good place to stay,
without enough food,
without enough clothes,
without agricultural implements,
not meeting basic needs,
and not being able to send their children to school.

A rich household was described in terms of what the household possessed. A rich household might have:

2 or more wives,
2 or more houses,
agricultural implements and
animals, especially cattle and goats.

A rich person is able to send his/her children to school and consumes good food. Businessmen were often perceived as being rich relative to the rest of the community.

The group from GKMRKC villages suggested that a household would need about $Z 4800 a year in cash income if the household had a few children in primary school and more if the children were in secondary school. The group from DNN villages suggested a significantly lower annual income was required to meet basic needs, perhaps $Z 800 per year.

IV. Conclusions

Through the willingness to share indigenous knowledge about the area demonstrated through the village meetings, it was clear that local people place value on both the knowledge they possess and the ability of the researcher to communicate this knowledge to other arenas. The participants in the village meetings understood the limitations of a research project but viewed this as an opportunity to express their expertise on their environment as well as their aspirations for the future. In this case study, the hierarchical nature of the relationship between researcher and local resident often changed.

The participatory research methods employed in this case study were typical examples of the group exercises used as part of a PRA or RRA. The exercises concentrated on the natural resources and landscape of the area but given the flexible nature of the participatory research process, the exercises could have concentrated on any number of economic relationships. These exercises proved to be instrumental in determining which research questions were worthwhile investigating. Throughout the process local people can have considerable influence over the direction of a research project.

The meetings provided an opportunity to determine the feasibility of different possible directions that had been considered in developing the research proposal. For instance, the

feasibility of collecting data for a study of the resource allocation decisions for a series of environmental products was called into question. If the study was limited to examining firewood, the study would be reasonable and of interest to the people of this area. The interest shown by women in the issue of firewood assured the researchers that households would be willing to participate in personal interviews concerning trips to collect firewood. A firewood collection study was thought to be feasible based on the variability of the attributes of the collection sites. Women were collecting wood from a variety of locations and there are differences in the attributes of the various firewood collection sites. For instance, from the resource listing, it is possible that women might be able to collect wild fruits, rest and have water to drink, on trips to some locations but not all locations.

While employing PRM may have added another stage to the research project, the methods proved to be a useful tool for economic research. The case study demonstrates that PRM are an efficient means of determining the appropriateness of a research site and the research questions that could reasonably be pursued. If the researcher is prepared to be flexible and change directions, PRM can be used to improve research questions and hopefully improve the quality of data collected in subsequent phases of the research. Thus, PRM and academic research do not have to be at cross purposes. By viewing the learning process as being mutual, the researcher brings forward concepts and questions of academic merit and the community is able to provide direction and advice about what is feasible and what is relevant.

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