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A Typology:

Participatory Research and Gender Analysis in Natural Resource Management Research

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A TYPOLOGY: PARTICIPATORY RESEARCH AND GENDER ANALYSIS IN NATURAL RESOURCE MANAGEMENT RESEARCH

Yianna Lambrou∗

Introduction

The Consultative Group on International Agricultural Research (CGIAR) system and collaborating institutes aim to help the poor and poor rural women gain greater access to appropriate technology. This aim will be achieved by improving the understanding and application of participatory methods and gender analysis (GA) in natural resource management (NRM) research.

This chapter provides a framework for classifying different approaches to participatory research and gender analysis (PRGA) in NRM research. The typology is a first approximation, to be tested empirically by researchers and farmers in the field and was originally developed to provide a unifying framework for the funding of small-grant projects. The typology divides PRGA into seven grades that measure farmer participation in research, from minimum to maximum levels. It is offered as a framework that permits identifying subcategories and/or intermediate levels when applied to specific cases. Although developed for research in general, the typology is largely based in the NRM context given the case studies, literature, and dialogue amongst colleagues who helped its development.

Background to a PRGA Typology

Participatory research approaches

The demands for more successful, efficient, and effective NRM research led to studies that have shown "participation" to be a critical component. This led to a growth in including participatory research (PR) as part of the work of agencies, nongovernmental organizations (NGOs), government departments, and banks. During the past 20 years, different schools of thought on "how to do" PR have also emerged.

Despite the complexity and diversity of approaches, some common principles unite them. Pretty (1995, p 174-5) identifies some of the approaches practiced in at least 130 countries that either have highly specific locales and limited scope (e.g., Samuhik Brahnma in Nepal) or have more extensive applications (participatory rural appraisal). He writes that:

(1) The methodologies are cumulative and group based, seeking to involve all participants,
(2) The values of different perspectives and different world views are accepted and recognized,
(3) Strong emphasis is lain on group inquiry and interaction that brings together researchers from different disciplines and sectors and outside professionals working with local people,

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(4) The adaptation of these approaches is flexible, according to new conditions and cultural contexts,

(5) Transforming ongoing activities to bring about what people regard as "improvements" is emphasized,

(6) The "expert" is best seen as someone who will help others to achieve what they believe is important, and

(7) Efforts lead to action and change, which represent an accommodation between divergent views. The debate and/or analysis define the changes and also motivate people to take action to implement the changes.

What is participation?

The word "participation" has multiple meanings although people assume some common understanding of the term. Rarely do researchers challenge any of the ideological differences that may lie behind its use. Participation can be **a means** to accomplish the goals of a project more efficiently or cheaply, or it can be **an end in itself** whereby those who manage the entire process exercise control from the start. Both these types of participation imply different relations between members of a community, and between them and the state, agency, or research institution (Nelson and Wright 1995, p 1). Thus, a key issue for researchers is whether farmer participation is seen as **a means** or **an end**.

Similarly, participation can increase or decrease opportunities for change and so can be empowering or disempowering (Oakley and Marsden 1984). McCall (1987, p 1) takes this further and distinguishes three uses of people's participation:

(1) To facilitate the implementation of outside interventions and policies selected by higher level authorities (state, region, or party);

(2) To mediate, that is, as a means of modifying, guiding, and reformulating higher level interventions and centralized power so as to reflect more genuinely local needs, aspirations, and resource constraints; and

(3) To empower the weakest rural group's power in terms of access to, and control over, resources and their social distribution.

We need to define "participation" by looking closely at different ethnographic contexts and observing at firsthand how interactions work in reality with its conflicts and negotiations. Our aim is to be as aware as possible of the diversity of existing conditions, so as to act upon them. Thus, we need to know about local conditions to realistically help women and marginalized people to "determine choices in life and to influence the directions of change" (Moser 1993, p 1815).

Participation processes have two central axes: production of knowledge and empowerment. Knowledge is gained whenever two parties interact, although it may emerge in different forms, either consciously or subtly. When interaction aims at gaining knowledge then participation will more likely ensure that the resulting knowledge and action are directly useful to those who participate. Empowerment works through a process of "conscientization" (Freire 1973). This involves people constructing and using their knowledge so that they can "see" how established

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interests monopolize the production and use of knowledge (Reason 1994, p 48), not for the benefit of all. Those who participate in NRM research can better understand the causes of their NRM problems and therefore can mobilize resources and action to change their situation.

Is it really empowerment?

Participation is also used to mean "empowerment" of the poorest and weakest sectors of society. However, well-meaning development organizations may not always achieve empowerment, given its many ideological meanings. In the last 30 years, many definitions and much debate from different points of view have ensued (see Chambers' work, for example). The word "empowerment" now has a gradation of ideological hues used by such diverse organizations as the World Bank, the military in Guatemala, and radical political movements.

The notion of power underlies any discussion of empowerment. Nelson and Wright (1995) describe three models of power currently in use to analyze different aspects of participation and empowerment. They are based on different definitions of power and its use.

(1) The "**power to**" model is described as one of human growth and assumes people's capacity to grow personally into power without necessarily negatively affecting one another. At the personal level this involves developing confidence and overcoming internalized oppression. This strength enhances the ability to negotiate and influence close relationships and to work collectively for stronger impact than if one worked alone (Nelson and Wright 1995, p 8). Achieving "**power to**" means that internally stronger individuals can begin to challenge the status quo.

(2) The "**power over**" model involves gaining access to "political" decision making as equal partners in a process of development. The challenge is for marginalized groups such as farmers, unskilled workers, or women to be treated as equals in a system where power may be viewed as a finite sum—if one sector gains power then another loses it. In this analytic model, power is seen as coercive and centered on government institutions with some spillage into other societal groups. How power works in practical situations when the impact is felt rather than being visible (e.g., caste or religion) is not explained.

(3) The "**power for**" model, in contrast to the previous view, asserts that power is not a "thing", a tangible substance possessed and acted out by an institution viewed as powerful. Instead, "**power for**" is found more in the social discourse of actors and institutions that manage and shape events. The logic may not be immediately visible, but the outcomes are influenced by a worldview and a way of "knowing" that shapes concepts and creates subjective realities without reference to the reality. For example, poverty becomes a theoretical concept for "development", unemployed laborers become "the informal economy", local elites become "partners for empowering the poor", and government bureaucracy becomes "local executing agency". The discourse of the development apparatus functions on its own logic (often not immediately visible) and on the basis of an unknown and labyrinthine power structure that may hinder rather than facilitate farmers or women exercising "**power to**" to have "**power over**" their lives. Overall, it is an extraordinary assumption associated with participation and participatory models that through " empowerment" some can act on others to "give" them power or enable them to realize their own potential!

Empowerment has to be understood within the different social and cultural contexts that determine it. Burkey (1993, quoted in Vainio-Mattila, 1996) identified five basic issues that make planning for participation and empowerment difficult:

(1) The problems and obstacles that participants face influence each situation. Initiatives to promote participation cannot necessarily be based on previously defined standards and objectives that may actually prevent initiatives.
(2) Poor participants may need to see their economic situation improved if they are to participate. This in turn may lead to conflict with the more economically powerful elements in their communities.
(3) Self-reliance and the need for external assistance must be balanced to avoid newly created dependencies. Promoting participation in initially non-participatory, dependent situations, often requires some external help that has to be carefully weighed to avoid new dependencies.
(4) Organization is a prerequisite for participation; however, care must be exercised to avoid organizations becoming centers of formal power controlled by the few. Those who are directly involved and will benefit from their organizations should also have genuine control over them.
(5) Participatory processes seldom begin spontaneously. A leadership whose visions may be external to the perceptions and aspirations of those concerned usually initiates these processes. This inherent contradiction must be resolved and mere mobilization surpassed to create genuine support for an externally defined cause or issue.

Role of researchers

Nelson and Wright (1995) question how researchers and development bureaucrats, who are part and parcel of existing power structures, can actually "empower others". The question is how do those who have **power over** others actually empower them without inadvertently strengthening their hold through the invisible workings of the system? Ultimately, because research is a political process, introducing participatory methods means shifting the balance of power, which threatens the status quo.

Thus the dilemma is how researchers, who are part of a powerful system of externally funded, managed, and accountable development mechanisms, can engender **power to** among people whom they have considerable **power over** through their research. In the last 30 years, ideas about PR have raised questions on the role of researchers in this dilemma, challenging ideas of simply understanding social events without transforming or being transformed by them in the process. Increasingly, feminists, anthropologists, and academics have challenged the view of researchers being the single authority in the research process. The voices of marginalized women and the poor have not been heard, but they have with ample experience about water, plant breeding, or resource management resources. Their knowledge has increasingly become respected. These hitherto silent actors are now using their **power to** challenge and negotiate with researchers and bureaucrats who possess institutional **power over** them.

Therefore the PR process as practiced by development agencies to be truly participatory requires vigilance, critical analysis, and a continuous checking of the balance of power,

particularly because the organizational structures of development agencies may not be amenable to putting into practice their participatory rhetoric. Although agencies may wish to be participatory, in practice they may maintain centralized control by managing finances in the North, implementing research in a top-down hierarchical way, or by maintaining patriarchal decision-making structures. Working with "communities", for example, may exacerbate problems because agencies often assume a homogeneity of interests that rarely exists in real life. Communities are composites of different groups and are not necessarily as consensual as outsiders would wish.

For funding agencies, the potential risks emerging from the differences between their institutional expectations and actual social relations are especially high in planning research. To be effective, agencies need to know in advance what objectives are realistic and achievable and how success can be appropriately measured. The risks and difficulties inherent in these disparities are particularly evident in seeking measures of phenomena that are not measurable (how does one measure "empowerment" or "increased gender sensitivity"?), and where short project times or cycles expect results that in reality take longer to express themselves. (Often, because of their institutional needs, agencies will work mostly on technical programs that can show quick results.)

Similarly, environmentalists and feminist writers in the face of ecological degradation have vociferously criticized formal scientific traditions and modern technologies. They say that technological development does not happen spontaneously and is often undertaken without considering the political or economic context. They also claim that the science and technology structures and systems should be socially accountable in some degree to those whose needs are supposedly being met. For example, Mies and Shiva (1993) are critical of the assumed gender neutrality of science and technology. They argue that men's historic exploitive dominance of nature is now being duplicated when Third World women are pressured to accept (not always appropriate) technologies to achieve equality with men. Therefore it is important to identify who controls the choice of technology, who manages the process of technology introduction, and where the benefits and risks lie in the adoption of these technologies. The central theme in promoting technology is control (Vainio-Mattila 1996, p 140). Control needs to be based on existing technology options and skills related to the locale and to those who will be involved in adoption.

A related debate on PR concerns the relative importance of theory and practice. In a developing country context, the issue is seminal given that research conducted within a development context has been considered related to the process of social change by development practitioners. Participatory research similarly has sought to create a research situation that does not separate theory from action, is based on practical problems, and serves to transform the social context, especially in post-colonial societies. Borda (1987) further argues that theory and practice (or knowledge and action) are absolutely inseparable and thus neither the object nor the subject of research. Knowledge is not produced in a vacuum, but within a social reality and process. As a result, any research framework must emerge with the participants and from their social reality for them to benefit from the research. Borda also insists that people can create and possess knowledge that is scientifically valid if this validity is determined in terms of social action.

Roles and responsibilities

The researcher's role in PR then becomes different than that in the traditional sciences, where a breach occurs between those researching and those being studied. In PR, the stakeholders are neither mere observers nor objects of the study, but are actively involved in the whole research process. Their role as experimenters and innovators - one they have acted out for millennia - needs to be acknowledged and incorporated into scientific research. In any participatory NRM research process, who participates and how they participate must therefore be addressed. Understanding the individuals and the nature of their participation in the community management of resources entails knowing what social roles and responsibilities men and women have in agricultural production.

Using gender analysis

Gender analysis is an extensive methodology that examines the interactive roles of men and women in terms of labor relations, access and control to land and to natural and financial resources, decision making, and specific knowledge about NRM processes. The debate over gender analysis has focused on how to include women's contributions in planning and decision making at the same time showing this as efficient and desirable. This type of analysis evolved after development experiences showed that just as economic benefits do not "trickle down" to the poor, social benefits do not trickle down to women. In practice, the "special consideration of women" in projects, or separate add-on projects organized for "women's special needs" replaced the previous systematic exclusion of women from development planning.

Men and women manage their "theoretical knowledge" about NRM differently and this influences their "practices", especially because women have a unique outlook that comprises both productive and reproductive aspects. Thus, different NRM decisions and outcomes are to be expected. This diversity of views also indicates the different types of cultural context in which researchers engage and an extensive (young, old, poor, rich, farmer, non-farmer, low or high caste, etc.) variety of men's and women's needs that must be kept in mind in any research design.

Participatory strategies promoting women's involvement in NRM projects are seen as attempts to include their needs. However, just increasing their numbers will not necessarily lead to their emancipation or to the equitable sharing of benefits. Social gender inequities occur in the ownership of resources and in social and economic status, for example, that need to be addressed if women are to truly benefit. NRM projects have usually been based on the "male norm", which implicitly or explicitly excludes women because it requires a minimum level of skills, resources and time, some formal education, and a level of mobility—to none of which women have immediate access.

An extensive literature (Moser 1993; Mosse 1995; Agarwal 1997) indicates that women are disadvantaged on all counts. They are poorer, have little or no freedom to travel or to interact with men, have less free time, and daily need to spend unavoidable time with family and food preparation responsibilities. The degree to which women will benefit from participation in NRM research projects will thus depend on how the underlying inequalities they face in accessing

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power and resources are addressed (Mayoux 1995, p 250). Awareness of gender inequalities must be raised in both men and women before any PR methodologies can be applied (Guijt 1994). Simply saying that gender is important and will be considered is not enough. Serious questions must be asked about which women can get involved and how, what sort of participatory methods will be most appropriate for their work loads, and how exactly will they benefit in gaining greater access to income or other benefits.

Participatory research is not automatically gender-sensitive. PR methodologies rarely incorporate a thorough gender-differentiated analysis. However, if used carefully, they can address practical, analytical, and institutional questions as, for example, when:

(1) Participatory research is equally amenable for use by men and women (rich, poor, educated or not, caste, etc.);
(2) Gender has been used as a guideline in selecting and setting up PR approaches; and
(3) The institution uses the findings of gender-sensitive PR to benefit women (Guijt and Shah 1993).

Obviously some long-term gender problems need political and strategic solutions that have to be addressed nationally and intentionally. For our purposes here, we must stress that PR does not automatically or necessarily address, accommodate, or accrue benefits to women. Instead, conscious efforts have to be applied to examine **who** participates (because special mechanisms may be needed to bring in and prepare disadvantaged stakeholders) and at **what level**, on **whose terms**, and **at what cost**. The terms under which women and men can and will participate in NRM research should be thoroughly addressed to enable them to get involved in the "right ways", that is, in ways that increase their power to change their own situation.

Both gender and intra-gender issues should be considered such as age, wealth, ethnicity, caste, race, marital status, and literacy level. When considering gender as an analytic category, "stakeholder" or "actor" might also be useful terms because they include gender and intra-gender characteristics. How these characteristics combine in stakeholders might shed light on how they tackle and solve any NRM problem.

Defining issues for creating a typology

Some issues are involved in applying PR methods and GA that affect their implementation. These issues are not easily resolved and so pose challenges for researches committed to PR and GA. However, addressing these issues or being aware of their complexities contributes to an overall ability of researchers to interact with stakeholders in ways that lead to mutual benefit.

Selecting PR methods and levels. Once researchers decide that engaging farmers (men and women) in the research is desirable and necessary, the next issues to consider are how to involve stakeholders and to what extent. Many innovative manuals are available worldwide for a range of contexts involving groups, teams, and the use of a variety of sampling methods, interviews, and visualization or diagram methods. A prerequisite is to determine the intent or objective of participation. For this, a researcher must assess the potential impact of the research and determine how stakeholders can contribute to that goal and what they can gain from the research

process. Impact refers to the eventual outcome related to the projected expectations or goals of the research.

As a starting point, note that researcher and stakeholders may have different interests in conducting the research. The farmers may be looking for a solution to an NRM problem; the researchers may also want to explore some additional scientific hypothesis. This should result in collaboration of a certain type. Farmers and scientists may identify differently what will ultimately be considered the "success" of the research outcome at the beginning or end of the research process. Although two separate definitions of success may exist, they are not necessarily contradictory or immediately compatible. Practical involvement and a negotiated commitment to the process will determine the outcome.

Part of the goal equation for the research is also knowing what the farmers will obtain from the research process. Have farmers (male and female) expressed a need to solve a practical problem through technical research? Is the research goal to build the farmers' capacity for them to make demands on the formal research system? Can the research experience strengthen farmers' existing experimentation and research capacity by providing needed inputs? Or can a goal of the research be to enhance and conserve indigenous knowledge? Most importantly, can the research empower women and men to take action to solve their own problems (Ashby 1996, p 20-21)?

Thus, who defines the goals, what is "success" for the research, and by what criteria, are crucial first questions in identifying the choice of participatory approaches. For example, is the research goal to develop a record number of technologies that farmers and women will adopt in record-breaking time? Is the goal a one-time research activity for an urgent NRM problem? Or is the goal to develop fewer and perhaps humbler technologies that will be adopted more slowly, but more systematically? What social grouping is the research going to benefit the most? Is the goal to complete a research process in the fastest and least expensive way, recognizing that taking the time and investing the resources (human, economic) to implement a more inclusive participatory process may slow down the research and be more costly? Who will sustain these technologies? What are the benefits to farmers (men and women)? How do they differ?

Initially, a range of impacts or results can be identified when using PR methods:

(1) Increased social benefits/empowerment – evaluated local knowledge and greater social involvement (equity, increase in welfare of women and children and increased food security); benefits may vary for women (poor, low caste, rich, higher caste, etc.).
(2) Greater control of the decision-making process by stakeholders (various types) – control may vary depending on who the stakeholder is. Different stakeholders may have to negotiate their diverse interests between them (i.e., farmers, consumers, processors, etc.).
(3) Increased economic benefits for farmers (women and men, rich and poor, etc.).
(4) Building farmer capacity to identify problems and do research for their own benefit. A diversity of women and/or farmers may mean different impacts and different capacity needs.
(5) Acceptance of technical improvements – more easily adopted technology, better designs for farmer use, increased use and benefits of technology for women and men, and different needs for technology types.

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(6) Institution building – such as community organizations, conflict resolution mechanisms between different stakeholders, and effective NRM for collective local capacity building.
(7) Increased information flow and better communication among farmers, women of various social strata, and between researchers and farmers.

Other factors to be considered are standard research planning criteria, but those that take on particular significance in PR. Some of these factors are important in setting goals and choosing an appropriate research approach. They include:

(1) The number of technologies to be completed and adopted according to the project's objectives and schedule.
(2) The time frame or adoption rate, i.e., speedy adoption versus slower one. Is this time frame feasible considering local agricultural or resource practices and such factors as cultural norms? (Non-participation may be the fastest option.)
(3) Cost limitations in participatory versus non-participatory approaches in terms of training, upgrading farmer skills, engaging more personnel for doing PRA, et cetera.
(4) Balancing the need to see practical results immediately with long-term requirements (especially required by an empowerment process, particularly in the case of women who may need more preparation over a longer time period).
(5) Acquiring new skills by the researchers, and farmers, prior to engaging in PR.

Therefore, goals and project objectives have to be defined and costed at a variety of levels – economic, social, technological, temporal, cultural, and ideological (i.e., empowerment as a value and as an end in itself).

Further criteria for selecting participatory approaches are:

(1) Is it possible to have involvement in the decision-making process at all stages?
(2) Can symmetrical relations of power exist?
(3) Is information sharing two-way?
(4) Who controls the resources? Who gives access to resources?
(5) Are interaction and involvement continuous?
(6) Where does the research originate? Who initiates the process?
(7) What kind of information or input is shared?
(8) Where are decisions made, inside or outside the community (discouraging expert/client relations)?

Some specific issues will arise in the research process once the PR method is selected. For example, researchers have often noted the difficulty in balancing the practical benefits of research with the potential political results. The latter have a long-term and often structural impact on the lives of farmers and women, but the immediate practical benefits are more identifiable and measurable, and therefore administratively preferable. Although a typology will not automatically determine how to resolve these operational challenges, it should provide some guidance to researchers on what to expect as they engage farmers, and the limits of that engagement.

Recommended PRGA Typology

The PR typology proposed here outlines a gradient of participatory methods that range from those least involving farmers to those that are most inclusive—from the most passive research (formally led by researchers) to the most inclusive and active (farmer-led). Each type includes an assessment of the costs and benefits of working more or less with farmers at each stage of the NRM research process. This typology includes the methodologies used and discusses some of the possible outcomes associated with each stage.

A grade from 1 to 7 (from least to most) is used to conveniently delineate the levels of farmer involvement and participation in the process of NRM research. Note that different research situations and different time frames call for different grades of participation. The typology does not necessarily suggest that one should aim always for the highest grades. Grades as a concept are perhaps too sequential with an inherent hierarchical bias. The challenge is to determine what degree of participation is needed in a particular research activity (diagnosis, technology) and how to move from one grade to another as time and resource conditions evolve.

Further, in applying the typology several factors influence what is appropriate at each stage: the nature of innovation involved (technical or social), the nature of the research (basic, strategic, or applied), and the range of stakeholders in a research activity (scientist-farmer, scientist-farmer-extensionist).

Grade 1: Positivist theoretical research

This is the least inclusive and most passive of the methodological approaches in terms of participation**.** This type of research emerges from a tradition where theory is reduced to its logical structure, which is then regarded as the probable description of a pattern (Harre 1981, p 3-4). This also can be referred to as Gramsci's inorganic traditional intellectual approach to viewing situations "from the outside" without engaging the problems from within. This research involves literature searches and preliminary research done to understand, prioritize, and propose potential solutions or technologies for the problems. It is a most theoretical approach, which focuses research on "cause and effect" in the prioritized problems without farmer participation or a distinct gender analysis.

Researchers who may have some inkling about a problem and only have a theoretical understanding of it and few practical solutions to offer use this type of least participatory and most passive approach. It may work well if it evolves and remains as pure research done in a laboratory with no outside input and without any concern for social action. If it is not discussed or tested with anyone outside the research community, is published as data only for use by a peer academic community, and is not introduced in the field as a reliable tool, then it may not need to include stakeholders substantively.

However, this approach has potentially enormous negative consequences if used for farmer application. The results may be irrelevant to farmers' needs and research interests. Outright rejection of the research by farmers is a possibility, which would make the research extremely

expensive. This approach has no impact on social change and empowerment of farmers and may be the most costly in terms of developing expensive technologies that no one will want.

Grade 2: Passive information sharing

This approach only involves stakeholders receiving information, that is, being told what is going to happen in the research. Researchers or project managers unilaterally organize and implement it without seeking the stakeholders' response. The research data are gathered, developed, and managed solely by external "experts". The researcher operates at the level of scientific peers without any pursuit of farmers' ideas or knowledge. The process is conceived and managed in an entirely top-down manner by outsiders who inform "beneficiaries" of the process and outcome of the research.

With this method, farmers have no opportunity to express their needs or offer their ideas. Farmers are unlikely to have any input in what is being suggested and will most likely passively accept the results of the research as long as it appears expedient for them. They will reject most of the intervention, or at best they may modify it to suit their needs. In this scenario, researchers ostensibly are gambling that their assumptions and definitions of need are accurate.

Grade 3: Consultative stage

This approach involves more participation in the initial research and design when farmers are consulted and includes some discussion of their needs in defining the problem. Questionnaires and participant or observation techniques may be used. Some gender analysis or consideration may be attempted. The researcher remains the sole manager of this process of setting and defining the parameters of the research, but the stakeholders are acknowledged as possessing relevant knowledge. A limited role for farmers is also seen as a pragmatic resource for building rapport with communities that will facilitate the research process or help the speedy adoption of results.

This approach is a little more inclusive, but remains highly centered on the formal expert, "the researcher". Farmers might later reject technologies developed only by consultation, making the research expensive. The consultative approach may be selected when time is limited for carrying out extensive participatory research, or as a first identification of a problem or situation. Women farmers may not be included and the outcome of a gender analysis may not be incorporated.

Grade 4: On-farm testing

Moderate participation takes place when a researcher formulates a preliminary research design, involves stakeholders in preliminary field tests, seeks some ongoing feedback from farmers, and begins to test research validity by analyzing results with farmers. Farmers' knowledge and practices are valued in these situations and they in turn are able to learn something from researchers, the research process, or the research outcomes.

The researcher continues to determine the process, but some recognition of the farmers' expertise allows for qualitative involvement in developing a more relevant technology. If properly field-tested, a gender analysis can and should be included, because it can lead to practical opportunities for assuring quality research. Recognizing the different roles of men and women and identifying different stakeholders (some of whom scientists will train in field testing methods) may help with reformulating the expected goals of the proposed technology.

Actual field-testing may be inexpensive if farmers use their own plots and provide their labor. The resulting technology or product will be more appropriate, but with little capacity building for farmers and certainly no change in the relations of power between researchers and farmers. Their self-confidence will not increase. The farmers' decision-making process will lack control, and socioeconomic benefits will be minimal beyond payment for field-testing. Women may continue to remain largely excluded unless specifically included in the training and field testing of technologies, although the expertise and knowledge of both men and women farmers will be generally recognized.

Grade 5: Evaluation

In this type of research, farmers are involved in assessing the process and results of the research from the start of the intervention. They remain with the testing and their input helps to adjust the course of research trials and their outcome. Gender analysis provides knowledge of gender roles that enhances the inclusion and consideration of men's and women's different experiences in the evaluation process by refining their varying needs. Farmers' expertise is definitely acknowledged and some capacity building is given in evaluation techniques. Women (rich, poor, different castes) are (and should be) more involved in assessing research outcomes.

Greater recognition leads to the enhancement of farmers' knowledge and potential for replication or independent production. This approach could also include an element of post-intervention evaluation when ideas for further research, experimentation, and solutions could include the farmers. Researchers are here seen as equals and allies of the farmers because their knowledge is valued and therefore a more constructive rapport is possible between the players.

Grade 6: Collaborative planning

When researchers work from the start with farmers to define problems and arrive at an acceptable design that includes farmer expertise, needs, and future expectations, then a high level of participation occurs. Gender analysis carried out from the start identifies the social, cultural, and contextual limits and possibilities for research; and the practical implications of applying new technologies or products are identified. Researchers are ready to alter their research design to accommodate the needs of identified stakeholders. This approach recognizes the problem-solving skills and traditional and/or innovative knowledge of farmers and encourages them to organize themselves to accomplish what they want.

The research design is more relevant to the problem at hand and thus leads to a more appropriate use of technologies. Shifts in power in the relationships between researchers and farmers lead to greater capacity building and enhance farmers' own organizational skills. This

approach builds on existing knowledge and can ultimately be less costly because it will be more easily adopted, with a higher potential for success in resolving technical concerns. More social and economic benefits are also possible, because more possibilities occur for introducing social change.

Grade 7: Partnership

At this level, researchers and farmers engage in the research process from the start, both acknowledging and recognizing each other's expertise in identifying the problem, designing and testing a solution, and adjusting the process involved. Farmers may initiate research and engage researchers in solving problems while offering their own innovative solutions. Gender analysis is a prerequisite. Women will be involved alongside men as equally capable researchers in their own right.

This long-term approach is difficult to achieve in real life because it requires researchers skilled in developing human resource capabilities, able to communicate, and having the patience and resources to work with men and women farmers. The farmers must also take risks and devote extensive time and energy that may conflict with other life requirements (and clash with cultural contexts).

When stakeholders collaborate or participate extensively, this changes conventional roles in research, leading to a higher degree of technology adoption, and a greater sense of self-respect and self-empowerment. The farmers could become the focus for greater social change in their community given their newfound power and recognition of knowledge. They could challenge existing social institutions; particularly those based on gender and caste. Partnership of course includes a post-intervention continued dialog, which further enhances and strengthens the farmers' accomplishments and perceptions and ensures longer-term benefits.

Uses and Application of the Typology

Analysis of 121 water supply projects in 49 countries in America, Africa, and Asia found that participation was the most significant factor contributing to project effectiveness, maintenance of water systems, and economic benefits (Narayan 1993 in Pretty 1995). However, the projects scored low (about 21%) on interactive participation. All mentioned "community participation", but good intentions had not been translated into practice. The best results occurred when people were involved "in decision making during all stages of the project, from design to maintenance. If they were just involved in information sharing and consultations, then results were much poorer" (Pretty 1995, p 172).

Narayan summarized the study by stating that beneficiary participation in decision making was critical for determining project effectiveness, maintenance of water systems, environmental effects, community empowerment, and strength of local organization. But relatively few externally supported projects had achieved meaningful beneficiary participation. Even fewer had empowered women.

The type of participation then must be carefully selected and monitored. Its specific application should be stated clearly, and appropriate ways (social, cultural, and economic) should be found to shift from the more passive to the most active approach. Depending on whether participation will be a "means to an end" or whether participation will be an "end in itself", researchers are responsible for deciding what they want to accomplish and with care set out to do so. A research manager in using this typology could make decisions about what type of participatory approach to use depending on the objective, for example:

(1) If the objective is to build the capacity of men and women farmers to organize research that will lead to solving their own problems and engage their communities, then go to Grade 6 approach (Collaborative planning) in the typology.
(2) If the objective is to get farmer input in identifying solutions for a potential NRM problem, then go to Grade 3 (Consultative stage) in the typology.

Other contributions offered are:

(1) A basic contextual understanding of the situation is needed;
(2) Typologies can be used both for whole projects and at different stages;
(3) The typology can be used as an analytic and as a conceptual tool;
(4) This conceptual typology model could be used as a baseline model;
(5) The model should not assume that we already have knowledge about all aspects and are ready to act – we should not be expected to have a "complete" picture; and
(6) Different grades of the typology can be used at different times in the life of a single project.

Finally, ideas and suggestions were amalgamated into a "Wheel diagram" called "Types of Participation". The colored "Wheel" has two transparent disks mounted one on top of the other and moving freely to create new colors depending on their position with the light shining through them. This design should be viewed as three-dimensional given that it is intended to capture an idea of movement across time, with different outcomes where each choice is made (as a colored wheel would similarly produce different colors depending on the mix). The "Wheel" concept removes any moral judgement about the choice of participatory methods and instead focuses on the aim and movement of making choices depending on the different stakeholders, time, events, and resources.

At opposing ends of the "Wheel" are two archetypal areas of participatory outcomes, the **transformative** and the **functional**. At the transformative area the concern is with social and political **position** aiming for **empowerment**. At the functional area the concern is with material **condition** and aims for efficiency. As the wheel goes either way, we can be moving through time and different stages either closer to one or the other archetypal configurations depending on what participatory method we use.

The **transformative category** includes consultative and collaborative partnership (between colleagues), and community-initiated methods. The **functional category** ranges from manipulative to passive to contractual. The time wheel at the center captures the circular notion of time.

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These methods are defined below in no particular order of importance because they are in a circle and are connected.

- The "manipulative" may be undertaken by well intentioned (or not) individuals or groups who may press their ideas. This method is close to the "community-initiated" approach, which may also include aspects of the manipulative process.
- The "passive" entails extracting information and only seeking nominal involvement.
- The "contractual" involves agreeing to a mutual set of respective obligations without necessarily having a full understanding of what is involved.
- The "consultative" involves no role in the decision-making process as such, but a measure of consultation and feedback.
- The "collaborative" is based on planning joint action and decision making.
- The "partnership" is a relationship of equal partners or "colleagues" who share a common outlook, and goals, and function in a mutually responsible relationship of equals.
- The "community-initiated" is action-defined and led by community interests, but may have the danger of being manipulated by stakeholders who have social power depending on other intra-gender characteristics.

So the circle returns to the starting point, yet having no starting point and being able to begin and end anywhere depending on who the stakeholders are and how they interact with the problem at hand.

Acknowledgements

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The purpose of the CGIAR Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation (PRGA Program) is to assess and develop methodologies and organizational innovations for gender-sensitive participatory research and to apply these in plant breeding, and crop and natural resource management.

The PRGA Program is cosponsored by 4 of the 16 centers that make up the CGIAR: the International Center for Tropical Agriculture (CIAT), which serves as the convening center; the International Maize and Wheat Improvement Center (CIMMYT); the International Center for Agricultural Research in the Dry Areas (ICARDA); and the International Rice Research Institute (IRRI).

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CIAT's mission is to reduce hunger and poverty in the tropics through collaborative research that improves agricultural productivity and natural resource management. Headquarters in Cali, Colombia.

CIMMYT is a nonprofit scientific research and training organization engaged in a worldwide research program for sustainable maize and wheat systems, with emphasis on helping the poor while protecting natural resources in developing countries. Headquarters in Mexico City, Mexico.

ICARDA's mission is to improve the welfare of people through agricultural research and training in the dry areas in poorer regions of the developing world. The Center meets this challenge by increasing the production, productivity and nutritional quality of food to higher sustainable levels, while preserving or improving the resource base. Headquarters in Aleppo, Syria.

IRRI is a nonprofit agricultural research and training center established to improve the well-being of present and future generations of rice farmers and consumers, particularly those with low incomes. It is dedicated to helping farmers in developing countries produce more food on limited land using less water, less labor, and fewer chemical inputs, without harming the environment. Headquarters in Los Baños, The Philippines.