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Report of the First External Review of the Systemwide Program on Participatory Research and Gender Analysis (PRGA)

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CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

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THIS DOCUMENT CONTAINS:

- Science Council Commentary
- PRGA Response to the External Review Report
- First PRGA External Review Report Transmittal letter and Report of the Panel on the First External Review of the Systemwide Program on Participatory Research and Gender Analysis

Science Council of the CGIAR
Commentary on the External Review of the
Systemwide Program on Participatory Research and Gender Analysis (PRGA)

May 2007

The Report of the external review of PRGA was discussed at the Seventh Meeting of the Science Council (SC), held at ICRISAT, Patancheru, India. Dr. Thomas Walker, the Panel Chair presented to the Council the Panel's main findings and recommendations via videoconference. The PRGA Board Chair, Dr Janice Jiggins gave the Program's comments to the review via teleconference. The SC had received the joint formal response from the program and the host Center, CIAT. In general the program and CIAT agreed fully with the analysis, the 11 recommendations and critique of the review.

The SC commends the Panel for a perceptive and a well written review that provides a credible analysis of the Program. The SC broadly agrees with most of the recommendations but it feels that the Program is at a turning point where it needs to change to provide effective, international research on focused aspects of Participatory Research (**PR**), on Gender Analysis (**GA**) and on Impact Assessment (**IA**) to contribute to system priorities. Without change the program would serve mainly in advocacy and as a support for its constituency among the NARS and NGOs active at the local level in this area.

This review was unique compared to other Systemwide program reviews in that it included a sub-set of Terms of Reference tasking the Panel to assess—through a literature review—the evidence of *ex post* impacts of participatory research both within the PRGA, among CGIAR Centers and outside the CGIAR. The Panel was assisted in this supplementary task by a SC Secretariat consultant. The Panel Chair also reported in his presentation that the review had focused heavily on the substance matters of the program and less on governance, management and process issues. Furthermore, the SC was informed that the program was being seriously affected by the financial problems of its host Center at the time of the review.

The PRGA Program was initiated in response to a call largely outside the CGIAR Centers and subsequently it has developed a large constituency with Centers and among NARS and NGOs. It had a Center Commissioned External Review (CCER) in 2000, which the Panel used as input. The SC was pleased to learn that the Program has been productive during its 10 years of operation, considering its relatively small size in terms of budget and core staff, in publishing and establishing partnerships for small grants. However, the achievements have been mostly related to Participatory Plant Breeding (**PPB**). During the Program's two phases it has focused on PPB and Participatory Natural Resources Management (**PNRM**) during the first phase and predominantly on GA and IA during the second phase. The SC's commentary in the following pages discusses these four aspects and the Program's operations, and provides recommendations about the Program's future.

Participatory Plant Breeding

The Report includes a good discussion about the advantages and disadvantages of PPB, differentiating it from participatory varietal selection. The Panel draws its conclusions from several sources of information and indicates that the PRGA's PPB work has been successful both in terms of advocacy and enhancing IA methodology. Three large programs, two of them within the CGIAR, have been in operation for a number of years and there has been proliferation of

participatory breeding activities by national systems in developing countries. Although the Panel concludes that the Program has contributed significantly to the development of PPB, which was at its early stages when the program began, the Program's contribution to this growing interest outside the CGIAR is not quite clear. The lack of attribution of this success to the Program may be because it passed on funds to partners in small grants, particularly during the first phase that focused on PPB. To some extent a Program objective has been achieved in that participatory methods are being used outside CGIAR. The Panel observes that for several reasons PPB has not been widely adopted in the CGIAR and concludes that a lot of work is still needed in order to make PPB more efficient and to replicate the positive experiences in SSA, where PPB is slowly expanding.

The SC notes the Panel's observation that PPB has potential particularly in marginal areas with slow varietal turn-over or relying on landraces. The SC considers that in developing site-specific technologies, NARS have a key role with CGIAR support. The CGIAR involvement should focus on the IPG component of such targeted breeding particularly as related to PPB research process with broad applicability. Conventional breeding has evolved to incorporate several specific attributes from participatory research particularly relevant in heterogeneous rainfed environments. Such changes are evident in many of the rainfed breeding programs of the CGIAR i.e. rainfed rice, drought tolerant maize in Africa and many others. These changes, focusing on farmer defined traits, sampling of the farmer target environments in earlier stages of the breeding process, varietal release and less centralized seed systems should increase varietal adoption. Thus the SC strongly endorses the Panel's view of the need for better integrating both approaches in a congruent manner and also linking biotechnological tools such as marker assisted selection with eliciting farmer-desired traits, which the Panel notes as an emerging trend.

The efficacy of PPB has not yet been scientifically demonstrated, and systematic documentation of *ex post* impacts with appropriate counterfactuals is needed to show where and when PPB is cost effective and where it is not. The dearth of adoption data on cultivars derived from PPB also needs to be rectified. The SC does not think that experimental studies that pit the most relevant components of emerging PPB models against each other are a priority. Rather, a compilation of evidence that allows PPB to be compared with other breeding approaches would be valuable, particularly in environments where both approaches are practiced. Most of the studies on impact have focused at the results but not the specific process of PPB. Also the IA studies cited in the Report were virtually all *ex ante* studies using assumptions about potential impacts rather than measured differentials between PPB approaches and alternatives in an *ex post* context.

The SC recommends that the Program's work on PPB be continued for a third phase (3-5 years) placing priority on further compiling and assessing the existing ex post impact evidence and conducting a comprehensive ex post IA of the successful PPB cases identified by the Panel.

Further the SC suggests that the Program is encouraged to document the converging experiences between the PPB and so called conventional breeding particularly for the major rainfed systems. The SC notes that these types of discussions are already under way (see for example the recent Workshop on participatory Plant Breeding and Variety release in Jordan, ICARDA, 2007) and in its view the Program can facilitate the development of an effective breeding system for rainfed areas that focus on IPG outputs.

Participatory Natural Resources Management

The Panel reports that in addressing PNRM, the program has had a patchy history. There has been considerable staff turn over and the program has lacked focus. There has been little impact even though PNRM featured prominently in the early phase small competitive grants. The Panel notes a concern and disquiet about achieving focus even in the founding proposal. The Panel has proposed some options to regain focus, one of which is to base the PRGA work on NRM on affiliation with active NRM research in the CGIAR. The SC would have liked the Panel to further elaborate on how the participatory methods in NRM might be incorporated into the work being done by the Inter-Center Working Group in Integrated NRM. This group has been developing participatory paradigms with partners for a number of years.

Thus the SC agrees with the Panel's recommendation and suggests that the PNRM research component of the Program be integrated into the activities of the Inter-Center INRM Working Group.

Gender Analysis

The component of gender analysis in research was shifted from the Gender and Diversity Program to PRGA in 1997. It was planned initially as a cross cutting (across NRM and PPB) theme of the PRGA. The Panel notes that the consolidation of GA within PR created uneasiness with little achievement in the early phase. In the 2nd phase of the PRGA the focus was more on an advocacy role in "mainstreaming" GA approaches and the Panel notes, regrettably, a lack of focus on building a constituency of gender researchers and practioners inside the CGIAR and beyond. It is striking that even the more successful PPB does not seem to have had an explicit GA component that would have provided lessons for other participatory research or research in general. The SC finds it highly regrettable that the Program has not had influence within the CGIAR on undertaking research on GA leading then to mainstreaming. The SC believes that restricting the GA to participatory research only has limited the scope and subsequently the efficacy of the activities. The SC notes that such research is happening in isolated areas (e.g. see the recent EPMR of ILRI which commends the GA work of the Center and work at IRRI that was highlighted in the Report) and is a missed opportunity for the PRGA. The SC also takes note that GA under the G&D program did not strengthen the research issues , ones in the SC view are in most need of been strengthening.

The Panel finds, however, that the PRGA has done some good work with NARS in mainstreaming GA, mostly in Africa. The SC notes in the Program's response the reference to its purpose to effect change in the research system, including institutional change and how these changes influence gender relations. Even so, the Panel have observed limited success. The factors that may have contributed to the limited impact and influence in GA are likely to include the focus on advocacy observed by the Panel, the lack of research with empirical applications, and the Program's perceived limited interactions with the CGIAR Centers. The SC fully agrees that there is need to accelerate GA into the wider CGIAR system (across all research themes).

In summary, the SC sees a real need for more focused research on GA leading to mainstreaming GA into all CGIAR research. This is not being achieved in the current PRGA program (nor was it achieved when the GA was part of the Gender and Diversity program). The SC urges the Alliance to consider how this might be best achieved either in phasing out the PR component of the PRGA in order then to focus on the GA or in finding other instruments to build the critical mass among the Centers.

Impact Assessment

The Panel was charged to evaluate both the impact and influence of the PRGA program. The review team provided an assessment of the publications produced by the program and commented that although the program has produced a very large number of publications, including five "success stories" that the Panel has considered well documented, and other publications on IA, the documents are relatively few and have largely been found in the grey literature. A citation analysis revealed that too little has been published in high quality journals to enhance the Program's influence and impact.

The Panel estimates that between 10-20% of total CG expenditure, roughly US$ 40-80M per year, has been spent on PR related work over the last 10 years. This is a significant sum. From this level of sustained investment one would have expected to see considerably more documented evidence of impacts *ex post*. Indeed, as early as 1994, it was recognized that empirical evidence on the impact of PR was scanty (Okali, Sumberg, and Farrington, 1994), a point highlighted in the founding proposal of the PRGA. The CCER of 2000 further recommended that there was a need to "generate convincing evidence about the usefulness of participatory methods for improving research efficiency, targeting specific beneficiary groups and meeting CGIAR goals of poverty alleviation and protecting the environment". Notwithstanding the contributions made by the PRGA with respect to conceptual and methodological advances in IA—an area where the program has clearly made progress—the SC believes the program has been deficient in undertaking *ex post* IA case studies of PR methods. The SC is not persuaded by the conclusions drawn by the Panel that the impacts of PR have been adequately documented (p. 22). This is not well founded by the analysis in the literature review of PR impact studies undertaken to inform the Panel's deliberations. The five 'success stories', which are not clearly identified in the Panel's Report do not constitute sufficient empirical evidence. This is unfortunate, as having empirical studies using the novel frameworks developed by the PRGA could have validated and enhanced the credibility of the new concepts and methods.

The Panel suggests that because there are very few studies reported at this point it would not be worthwhile in engaging in a meta-evaluation of *ex post* impacts of PR. It recommends that the Program should continue investing its efforts in IA with emphasis on quantifying the impact benefits to different groups. The SC is in agreement with this recommendation. However, as indicated above regarding PPB, documenting benefits will not by itself persuade researchers to adopt that approach unless they see that it is also more cost-effective than what they have been doing, which argues for more comprehensive *ex post* IA studies that compare not only benefits but costs, and especially in terms of target groups reached. In the absence of experimental comparisons, and considering participatory approaches beyond breeding, it would be useful to assemble an inventory of benefits against costs of as many PR projects as possible – as a basis of comparison with other non-PR project investments. Unless this is done, it is doubtful if PR will ever be mainstreamed in the CGIAR or the NARS. Additionally, as most of the IA literature in the literature review could not be classified as *ex post* IA, this provides an added reason why much more emphasis should be placed on the conduct of well designed *ex post* IA case studies in the future.

Governance and Management

The Panel found the Program to be well-governed and well-managed in general. The Program has had an active Advisory Board and despite the recent financial difficulties, the host Center has been supportive of the Program. The SC agrees with the Panel's analysis on the importance of good interaction between the host Center, the Advisory Board and scientists of different

disciplines. The SC notes that the Program could not provide accurate information on how much of its funding had passed through to small grants, which makes the assessment of the Program's contribution versus the partners' contributions to the overall influence and impact difficult.

The SC notes that the Program's response includes as annex a draft strategy for a proposed third phase of PRGA. ***The SC recommends that a new strategy be formulated only after there is agreement on the future role of the Systemwide program.***

In conclusion, the SC recommends that:

i) ***the Program's third phase should focus on PPB (mainly documenting its impact and on bringing together the elements of PPB and the conventional breeding to enhance international public good research particularly for rainfed environments);***

ii) ***research on PNRM be integrated into the Inter-Center INRM Working Group; and***

iii) ***the Alliance of CGIAR Centers define how best to develop a critical mass of researchers in GA that will ultimately lead to its mainstreaming in all CGIAR Centers and Programs.***

PRGA Program Response to the External Review Report

The PRGA staff Advisory Board (AB) and CIAT appreciates the effort the EPMR took to understand the PRGA, its history and achievements. The EPMR's judgment that the program "has recorded several noteworthy achievements" and that "continuation is warranted" is welcomed.

The AB broadly accepts the assessments made as well as the criticisms of specific areas of the PRGA's work. A detailed response is given below.

Impact Assessment: recognizing the importance of both conventional economic and process-oriented impact assessment studies

Providing compelling empirical evidence of the impacts of participatory research has been a major goal of the PRGA Program since its initiation. The number of our published Impact Assessment documents over the past 5 years supports the conclusion that the Program has well reached that goal. We are pleased to note that the EPMR report recognizes the high quality of our "conventional" economic ex post impact assessment work, but we had expected an acknowledgment of an equal importance of process-oriented documentation of impacts, associated with the incorporation of participatory research (PR) and gender analysis (GA) in research processes.

To accomplish this major Program goal of substantial body of empirical evidence has required first convincing researchers to see value in assessing the impact of a participatory research approach, and forming a network of people interested in working together to accomplish this goal. Furthermore, reaching this goal has required developing frameworks for assessing the impacts of the PR methods as compared to the impacts of technologies alone, developing and testing some specific tools and methodologies for such assessment, conducting case studies, organizing workshops and international meetings to build the impact assessment capacity in the CG system and to promote mutual leaning among the impact assessment practitioners and maintaining the network amongst them, and providing support and backstopping to the centers conducting impact studies of participatory research.

The Science Council Standing Panel on Impact Assessment (SPIA) organized a meeting in 2001 in Costa Rica that focused on the question "Why has impact assessment not had more impact?" The meeting gave clear direction for PRGA Program's second phase of the impact assessment work. Through workshops and networks, the Program has promoted cross-center mutual learning among the scientists, which should result in the increasing recognition of the value of involving the ultimate beneficiaries in research and development processes. Ultimately this serves to promote the understanding why impact assessment should move beyond simple project accountability and attribution to including learning about effective research processes, including the organizational changes necessary to reach the poor and to have sustainable impact on their livelihoods. Several years of Program efforts process-oriented impact assessment is now being brought to public domain in two special issue peer-reviewed journals[1] in 2007 and 2008.

[1] Development in Practice and Experimental Agriculture.

Positioning of EPMR within conventional frame—missing the added value of institutional change and transformation processes

A critical dimension not fully acknowledged in the report, and which resulted from considerable interaction between Program staff, Board members and the Review team, was the strategic positioning of the PRGA to effect change in the research systems. Such research will be focused on understanding, measuring, assessing the processes of institutional change; and, how such transformations influence gender relations. Such research will be a public good in that it will influence future research to critically assess its role in influencing change in unequal gender relations.

Relations with G&D

It is indeed the case that the relations between G&D and the PRGA have been sporadic. This is attributable to three main causes.

1. The goals of the two programs are complementary but non-substitutable. G&D aims to support the recruitment and development of women and other, 'under-represented' persons in their professional careers within the CG system; the PRGA aims to support the development of scientific capacity to include the CG's clients and stakeholders in R&D and to adopt gender-sensitive approaches to technology development.

2. The PRGA, long before the G&D program was up and running, encountered many requests for personnel management advice, counseling and career support by individual men and particularly women staff, which it has not felt itself qualified to address. The advent of the G&D has meant that the PRGA thankfully relinquished the meeting of these needs to the G&D program.

3. The PRGA has successively tested the efficacy of a range of strategies to advance its proper aims vis a vis the CG centers – a part time gender specialist; center liaisons with PR & GA advocacy roles; training and mentoring; portfolio inventories; workshops and seminars; involving senior scientists in action research; an internet based 'list serve' mechanism, etc. As the G&D found its feet, it became clear that the G&D program was better equipped to take the lead in relation to some of these strategies since it is more directly focused on staffing and career development issues within the centers (e.g. advocacy, mentoring). In other cases (e.g. a part time gender specialist, the list serve) the results have not proved their worth). Others have paid off, with considerable success (e.g. involving senior scientists in action researching.

However, the PRGA agrees the time is ripe to discuss with G&D the PRGA's new program outline and to explore further the possibilities for shared activities.

NRM, in context of meta review of SWEPs, a role for PRGA is integrated

The PRGA accepts that the NRM work of the PRGA has lapsed over the last year. Its earlier work, although generating considerable publications, faced the common difficulty experienced throughout the CG, of maintaining focus and generic impact. The PRGA proposes to take up the NRM theme in its new program strategy principally in terms of PPB and biodiversity conservation (theme 1); African (women) seed entrepreneurs and soil mosaics (theme 2). (See Annex)

Rural institutions: CGIAR system priority 5c

The CG system priority no Priority 5c: rural institutions and their governance states "The CGIAR must better understand how rural organizations (including farmer organizations, women's producer organizations and private-public-CSO partnerships) can be strengthened and how they and other rural innovation systems contribute to sustainable agricultural development and enhanced technological and institutional change."

The EPMR has not commented on the significance of the PRGA's work on PPB as an institutional innovation that has influenced many national agricultural innovation systems, including the organizations of poor farmers. Following the definition of institutions subscribed to by sociologists and the new institutional economics, as "rules and norms" (as distinct from organizations), PPB involves numerous innovations in the ways that (a) national innovation systems conduct the research process and (b) farmers organize locally and in some cases, at national scale, to generate and manage plant genetic diversity. These institutional innovations have been shown empirically to reduce the time taken to get seed of acceptable varieties into the hands of small farmers.

Breeders in national programs throughout the world – e.g. in Colombia, Ecuador, Bolivia, Cuba, Nicaragua, Honduras, Venezuela, Morocco, Yemen, Syria, Ethiopia, Rwanda, Kenya, Malawi, China, Nepal, Vietnam -- have changed the norms and rules that structure their research programs' work with farmers as a result of the methodological innovations involved in PPB. In turn this has strengthened the capacity of farmer organizations to (a) make a demand on formal research systems to draw down technological innovations (b) exercise agency in other areas, such as the control over local biodiversity and the production and distribution of "farmer-improved seed". What is clear, however, is that the Program's work and in particular, its impact analysis has to the present, focused on understanding the "research side" of this change process. Future work needs to correct this balance and focus more on understanding how PPB strengthens farmer organization.

Under phase II, a deeper theoretical exploration of processes of transformational change was initiated and is ongoing. This has relevance for 'digging into' the lessons learned about gender-sensitive and pro-poor development, strategies for change, multi-stakeholder development of food chains, and livelihood diversification. The PRGA has also conducted impact studies that included the role of various partnership arrangements (involving public, private commercial, and civil society partners), and R&D consortia (such as ASERECA, The Eastern Himalayan Network).

PRGA's boundary spanning role: challenging bio-physical scientists to address quality and processes that determine pro-poor impact

An emphasis is needed on the strategic positioning of the Program to effect change by challenging the often uncritical practices of bio-physical research to address the quality and processes that determine pro-poor impact. Future research by the PRGA will focus on:

- Expanding the 'tool kit' for conceptualizing, understanding, measuring and assessing change, particularly as it relates to change in women's status
- Understanding the social dimensions of technology
- Challenging the uncritical concepts of science as a corporate activity and governance.

PPB- forward strategy

The report makes considerable mention of the progress that has been achieved in PPB. However the future role of PPB has to be considered in light of developments in innovative methodological approaches to PPB, particularly in the context of a changing agro-food environment. The new PRGA strategy for PPB includes the research in the:

- Broadening the genetic basis of poor people's crops
- Maximizing the use of agro-biodiversity for diversified livelihoods
- PPB as a tool for implementing farmers' rights

Budget strategy 2007 and beyond

The initial budget strategy is outlined in the program outline attached (see Annex). It is conditional on finding and appointing as soon as possible a new contract staff person who can take the lead in proposal writing and fund-raising, with the help of the existing staff, the AB, and CIAT.

CIAT Management Comments

CIAT particularly endorses the first and principle Panel recommendation that the performance of the PRGA warrants its continuation. Likewise CIAT agrees that PPB research should be continued (recommendation 2) and that attention to participatory NRM research should be strengthened, subject to the availability of additional funds (recommendation 3). CIAT agrees with the fourth recommendation on the importance of PRGA efforts to spread gender analysis throughout the CGIAR system, and fully concurs with the analysis of the PRGA staff on the considerations involving options for cooperation with the G&D Program which has a very distinct purpose. Funding for a competitive grants program could be useful if it could be obtained (recommendation 5). The PRGA Advisory Board has been recently formally linked to the CIAT Board of Trustees, and this should provide an importance governance link between CIAT & the PRGA (recommendation 6). To strengthen ties with the CIAT research community, an important practical step would be to post staff recruited for the PRGA in the future with CIAT programs, probably most helpfully at headquarters subject to other considerations. CIAT shares the Panel view of its seventh recommendation that impact assessment research has been and should continue to be an important part of the PRGA research agenda. CIAT agrees on the importance of publishing research in peer reviewed journals and the utility of additional graduate students for this purpose (recommendation 8). Likewise the good practice manuals can be an important program output as noted in recommendation 9. Of course the PRGA can have some outputs of both types, (journal articles and manuals) but clearly resource limitations will call for strategic choices about how much to emphasize each, and there will be further tradeoffs in the amount of attention to devote to short policy briefs (recommendation 11). All types of these publications have some value and there will probably always be a demand for more of each.

Annex

Concept Note: new SW PRGA program strategy

The new program is the outcome of successive discussions at PRGA-AB meetings, and with the EMPR. It was agreed in outline at the AB28.02 – 02.03. 2007. It comprises three thematic areas, and five supporting actions for mainstreaming gender research. Impact Assessment research is built into the program as a cross-cutting activity.

The three thematic areas are as follows:

Theme 1: New Developments in Participatory Plant Breeding (PPB)

This theme encompasses the following research sub-activities:

i. The development and/or application of new methods within PPB for maximizing the use of agro-biodiversity. The focus here is on methodological research that supports the diversification of poor people's livelihoods in agro-food chains

ii. PPB to support the broadening of the genetic base of poor people's crops

iii. PPB as an implementation tool for Farmers' Rights

Funding possibilities:

i. PRGA is included in a concept note developed by ICARDA in close cooperation with its CSO partners and INRA, for an ***"International Conference on Farmers' knowledge"***, submitted March 14th by Ceccarelli/ICARDA to the ***"Enhancing the Impact of Research for Development: A Pilot Competitive Grants Program to support innovative partnership and projects"***,

ii. Bhuwon Sthapit, John Witcombe, and Dr Joshi have offered to develop a draft proposal encompassing 1-iii in association with Asian partners (CSO, NARs, IPGRI), with potential funders already interested.

Theme 2: Institutional Innovations in Africa's Seed and Seedling Revolution

This theme encompasses the following research sub-activities:

i. Learning from women's seed and seedling commercial enterprises

ii. Integrating the CG's and NARs' public good outputs in poor people's seed value chains

iii. Development of methodologies for creating and applying 'good fits' among highly diverse soil mosaics, farmers' seeds preferences, and seed supply systems

This theme seeks to capitalize on proposed and existing investments in seed systems that can support Africa's 'rainbow revolution'. It is an outgrowth of existing work with ASERECA on the mainstreaming of participatory research and gender analysis. 2.i. aims to track case histories of successful commercial enterprises and synthesize lessons for supporting other women entrepreneurs, in the frame of diversification of agro-based livelihoods. 2.ii. explores how a more effective match can be made between what the formal system offers, and existing seed value chains. 2.iiii. draws on the PRGA's experience of multi-stakeholder participation in order to

match soil mosaics, farmers' seed preferences and seed supply systems. Previous work on 'recommendation domains' and 'socio-ecological niches' lay the groundwork; spatial analysis (including GIS and imaging systems, and extending to participatory soil management) offer complementary capacity. The expanding coverage and availability of mobile telephony may offer new opportunities for integration.

Funding possibilities:

i. Further discussion necessary with FARA, ASERECA, CORAF, SADDCC; CIAT; ICRISAT; WARDA; CIMMYT.

ii. The Clinton Foundation, the Volkswagen Foundation, and the African Women's Development Fund may be approached.

Theme 3: Re-framing Effective Action

Fundamental research in this area provides the theoretical underpinning of the new program. A preliminary position paper has been prepared outlining the theoretical ground. It addresses the unease noted in a series of recent reports from civil society, multilateral agencies, and bilateral assistance agencies that suggest the MDGs (800m hungry, or 1.2 m income poor) might not be met unless there is a better understanding of processes of change, that could lead to more effective development action. The IPCC 2007 assessment indicates some urgency in that climate change by 2020 already may increase the number of poor people to 2bn. The recent interest in 'innovation processes' tends to accept uncritically the role of technology as the main driver of change, and self-interested economic motivations, thereby ignoring the extensive ethnographic, sociological, and economic literature that demonstrate more complex, multi-source change processes. The main activities relating to this theme encompass:

i. Learning lessons from 'successful' actions (building on ongoing work)

ii. Feeding the lessons back into practice.

Funding possibilities:

i. IFAD has expressed interest in funding a mid-2007 workshop designed around 3.i. as a lead-in to its own work on innovation processes. IFAD plans a regional workshop for its West African partners at end 2007 on this theme, and is interested in the participation of the PRGA's ASERCA partners in this. This proposed collaboration could be the basis of future joint fund-raising.

Gender Mainstreaming
The five components are:

i. An annual Gender Research Prize, to stimulate gender research within CG Center programs.

ii. Policy Briefs, sharing the main lessons from the SW-PRGA and its partners' work

iii. Development of short Manuals on PR and Gender research for key research areas within CG Centers' research portfolios.

iv. Taking stock: carrying out a re-inventory of (a) CG gender research and lessons that can be learned from this; (b) exploring the impact on the research agenda of women scientists in the CG centers.

v. Building advanced capacity within the host center by (a) supporting CIAT to establish appropriate gender indicators in project review procedures and research evaluations; (b) together with staff with PR & G research capacity, mentoring one of the new Product lines on incorporating PR and gender research in their work.

Funding possibilities:

i. The regional Development Banks might support this. Anne-Marie Isaac has indicated the willingness of the Science Council to support any funding application under this head.

ii. and iii. The existing PRGA program funds/staff could develop prototypes of these on the basis of existing program outputs. Printing and distribution costs would need additional funding.

iv. This activity would need new funding. One possibility is a cost-sharing arrangement, supported by the Science Council, under which selected CG centers requested the PRGA to carry out such an inventory.

v. This does not require major funding and could be initiated in a process of negotiation between the PRGA and CIAT.

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Ruben G. Echeverria
Executive Director
Science Council of the CGIAR
c/o FAO, SDDC, Room C-628
Rome, Italy

Dear Ruben:

On behalf our panel, I am happy to attach the final report of the External Review of the Systemwide Program on Participatory Research and Gender Analysis (PRGA). We concluded that the PRGA has been and still is relevant to the CGIAR's mandate, and its work is in line with the Science Council's System Research Priorities for 2005-2015.

We hope that our report communicates a sense of excitement about participatory plant breeding which after only about 10 years of work is beginning to pay dividends and fulfill its promise as a vehicle for varietal change for poor households in marginal production environments. Scientific interest in participatory plant breeding is also expanding. Participatory plant breeding scores high marks on international public goods character, and the CGIAR has been a major player in its creation and development. The PRGA has made formidable contributions in research and advocacy to the growth of participatory plant breeding. Participatory plant breeding is of sufficient importance to the CGIAR and its partners that work in this area by itself warrants maintained funding to the PRGA for a prospective Phase III from 2008-2112.

We also found that the PRGA has also acquitted itself well in impact assessment. Over a relatively short span of six years a diverse body of interesting and relevant work is accumulating. Arguably, the Program's record in impact assessment is as good as any other systemwide or ecoregional program and may even rival the level of achievement in some of the Centers.

Our review also confirms two of the most important findings of the 2000 internally commissioned external review: research in NRM lacks focus and the integration of gender analysis into participatory research is inconsistent. Important work has been done on gender mainstreaming in NARS in Africa, Asia, and Latin American during Phase II, but there has been little testing and fine tuning of gender models and typologies that were developed during Phase I. Activity in both research and advocacy in participatory natural resource management has declined significantly over time since the start of the second phase of the Program in 2003. Real resources have declined over time both in budget and in Ph.D-level scientists. We spend considerable time in this report analyzing options to sharpen the focus of NRM and to make gender analysis a more integral part of the Program. We believe that the budgetary decline is reversible, but it is going to take considerable strategic thinking and effort to bring it back up to the real level of 1999-2000.

Most reviews in the CGIAR have slightly different emphases and ours was no exception. We benefited from the desk study on the impact of participatory research that was commissioned by the Science Council. The results of that study were broadly congruent with our impact assessment of the work of the PRGA.

We also focused more on substantive research areas than on process-based themes. The heart of our report is contained in chapters on participatory plant breeding, participatory NRM, gender analysis, and impact assessment.

At the outset of this review, Sirkka Immonen, who provided guidance and coordination for our work, told us that we would never be able to read all the publications that the PRGA had produced since its inception in 1997. As usual, Sirkka was correct, but we did read (however hurriedly) a good sampling of the work of the PRGA.

Also like other reviews, our review was not free of problems. We undertook the review at a vulnerable time when the focus of attention centered on more immediate financial matters.

Also probably like most other reviews, the panel agreed on most things, but did not agree on everything. In those cases, we agreed to disagree while respecting each other's opinion.

Many people assisted us in this review and their help is acknowledged in the report. At this time, I want to thank my fellow panel members, Eva Rathgeber and Baldev Singh Dhillon. I enjoyed working with Eva and Baldev and learned a lot from them. Hopefully, our work will play a role in improving the ability of the PRGA to continue to play an important role in the CGIAR.

Sincerely yours,

Thomas S. Walker

cc: Eva M. Rathgeber
Baldev Singh Dhillon

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

SCIENCE COUNCIL AND CGIAR SECRETARIAT

First External Review of the Systemwide Program on Participatory Research and Gender Analysis

Review Panel:

Thomas S. Walker (Chair)
Eva M. Rathgeber
Baldev Singh Dhillon

SCIENCE COUNCIL SECRETARIAT

MARCH 2007

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ANNEXES

SUMMARY AND RECOMMENDATIONS

The Program on Participatory Research and Gender Analysis (PRGA) was the fifth Systemwide Initiative (SWI) approved by TAC in the 1990s. The PRGA Program traces its origin to a six-day international seminar and planning workshop in 1996 with stakeholders from more than 50 institutions (IARCS, NARS, and NGOs). CIAT was designated as the Convening Center and the proposal from the planning workshop was co-sponsored by CIMMYT, ICARDA, and IRRI. The Program began to implement its work plan in April 1997.

Throughout its existence, the PRGA has been guided by its programmatic goal "to improve the ability of the CGIAR system and other collaborating institutions to develop technology which alleviates poverty, improves food security, and protects the environment with greater equity" and its programmatic purpose " to assess and develop methodologies and organizational innovations for gender sensitive participatory research, and operationalize their use in plant breeding, crop and natural resource management."

Over the past decade, the PRGA Program has recorded several noteworthy achievements. The inclusive nature of the Program, resulting in a multiplicity of partners, is one of the hallmarks of the PGRA. About 80 research project partnerships have been conducted. Investment in the PRGA has totaled about US$ 10.6M dollars and about 30 Ph.D. scientist years. Much of these funds have passed through the Program in the form of collaborative partnerships.

The period of analysis for this review was roughly ten years from the inception of the PRGA in 1997 to the present. The review was carried out between September 2006 and February 2007 by a three-member Panel. In October 2006, the Panel participated in a one-week meeting of the Advisory Board (AB) of the PRGA in Entebbe, Uganda, and subsequently visited field sites and NARS in Kenya (KARI) and Rwanda (ISAR) to see the progress of the work on mainstreaming gender analysis and participatory research in ASARECA. This two-week visit was complemented by e-mail and telephone interviews with key informants to generate information for the Panel's report. A literature review, conducted parallel to the program review, on the impact of participatory research, was another building block for this report, which also drew on an internally commissioned external review conducted in 2000.

We begin our report with three introductory sections that describe the work of the review panel, the PRGA program (Chapters 1 and 2), and the achievements of the Program (Chapter 3). The substantive areas of the Program are treated in the next four chapters on participatory plant breeding, participatory natural resource management, gender analysis, and impact assessment. Chapter 8 focuses on the issues of process and governance. In it, interactions with the CGIAR Centers, with the Convening Center, with the PRGA's Advisory Board, with donors, and with the outside world are documented and assessed. The report concludes with a chapter listing 11 recommendations that are accompanied by a justification that sums up our earlier discussion.

In the organization of the report, we try to tell a cohesive story while addressing the 14 terms of reference that have shaped this review. At the end of this summary, we provide a road map where the interested reader can find our responses to specific terms of reference in the report. The report is oriented mainly towards CGIAR Centers and NARS for reasons that are discussed in Chapter 1 and because of the institutional emphasis in our terms of reference.

Impact

The Program has contributed substantially to the development of participatory plant breeding (PPB) that was in its infancy in 1997. In its most complete form, PPB is characterized by eliciting and incorporating information from farmers into decisions on the choice of parents for crossing and by involving farmers in the early stages of selection. Progress in participatory plant breeding is seen in a small but increasingly visible and vibrant conceptual and empirical literature, and in emerging success stories of cultivar adoption. The role of the PRGA Program has ranged from informal and, in some cases, decisive interactions with plant breeders in the CGIAR, to the funding of PPB in NARS, to the convening of PPB thematic workshops, to the elaboration of state of the art reviews. The Program is also to be commended for its responsiveness to stakeholder demands to appoint a plant breeder as coordinator of the PPB working group in 2004. With the selection and active participation of one of the most respected plant breeders in the CGIAR system, the Program is poised to continue to make progress in this area that holds promise to improve the prospects for varietal change for poor people in marginal production regions.

Impact assessment is itself an area of impact and is one of the strengths of the program. Impact assessment in the PRGA significantly exceeds expectations in a systemwide or ecoregional program and rivals the amount and quality of work conducted in some of the better CGIAR Centers (in this area.) Research on impact assessment has benefited from strong collaboration with other social scientists in the convening center and with economists outside the CGIAR.

The literature review confirmed impact in both of these areas. It found that there was good evidence for the impact of participatory plant breeding in the literature and that a major contribution of the PRGA was in providing a conceptual basis for the assessment of the impact of participatory research and gender analysis.

The mainstreaming of gender analysis in NARS is another emerging area of programmatic impact. Thus far, that work has focused on capacity building and advocacy. The focus is now shifting to institutional research.

Effectiveness in performing its core functions

Since its inception, the program has had an effective priority-setting process that has featured widespread stakeholder involvement. Recent budgetary uncertainties have interrupted the undertaking of a much-needed stakeholder workshop to generate information on which priority setting is based.

More chronic problems in performing its core functions relate to participatory natural resource management and to gender analysis. Compared with participatory plant breeding, participatory natural resource management started later, staff turnover has been higher, focus has been difficult to achieve, and relatively little research and capacity building has been carried out on NRM in Phase II (2003-2007). It is clear that the NRM component of the PRGA urgently needs to be re-conceptualized and revitalized to address natural resource management issues from the perspective of participatory research and gender analysis. We analyze the strengths and weaknesses of several options for gaining focus in the NRM area in Chapter 5. Recommendation 3 in Chapter 9 centers on the need to strategize on the role of participatory natural resource management in the Program.

Gender has been seen as a cross cutting theme of the PRGA Program and there have been difficulties with integrating it into all of the Program's work. Lack of performance in this area is predictable because the Program has never had a fully dedicated gender specialist with a strong background in agricultural research. The problem of integrating gender analysis in the PRGA is diagnosed in depth in Chapter 6. Recommendation 4 focuses on ways to make gender analysis a more integral part of the program.

Less than expected levels of cooperation with CGIAR Centers are another consideration that is dampening programmatic performance. In the present budgetary scenario and incentive structure characteristic of the CGIAR, we do not see a viable alternative to improve cooperation unless and until the PRGA finds funds to renew its competitive grants program that was operational from 1999-2001. The problem of non-cooperation is diagnosed in Chapter 8 and is addressed in Recommendation 5.

Efficiency in management and governance

In general, the Program is well-governed and well-managed. The Advisory Board is strong, and the Convening Center has very actively supported the Program particularly in Phase I (1997-2002). Nevertheless, we identified several areas for improvement that are described in Chapter 8; and Recommendations 6 and 10 pertain to management and governance.

Relevance to the CGIAR and possible futures

Surveys of the PRGA show that CGIAR-related research that has a participatory content amounts to tens of millions of dollars annually. Although one can question the results of these surveys and the accuracy of the information, the fact remains that much research is conducted by the CGIAR with a participatory perspective. Improving the way that research is conducted should enhance the efficiency of the CGIAR.

But the somewhat surprising performance of PPB makes a stronger case for maintaining and perhaps even augmenting the investment in the PRGA at this time. Research in participatory plant breeding is of sufficient importance to the CGIAR and its partners that work in this area by itself warrants maintained funding to the PRGA for a prospective Phase III from 2008-2112. Participatory plant breeding is heavily endowed with an international public goods character, and the CGIAR has been a major player in its creation and development.

In a short time span of ten years, results in participatory plant breeding have substantially exceeded expectations. Three plant breeding programs have contributed to the development of PPB. They account for the majority of publications in an expanding peer-reviewed literature and for the majority of emerging success stories in the field. Two of these plant breeding programs are located in the CGIAR, and the third is headed by a plant breeder with extensive working experience in two CG Centers. All three have had close interactions with the PRGA, and one is the coordinator of the plant breeding working group.

In the next five years, prospective practitioners of PPB should have a better appreciation of what works when, where, and why as experience accumulates to allow researchers to approximate an ideal of efficient participatory plant breeding. The experience of sustained PPB in Sub-Saharan Africa (SSA) is slowly expanding from a very small base. More concerted efforts are needed to

replicate and adapt global experience to SSA if the poverty-alleviation potential of PPB is to be attained. In both research and advocacy, the PRGA still has a large role to play.

RECOMMENDATIONS

These recommendations are discussed in Chapter 9.

Recommendation 1. The PRGA's past performance and its present and future relevance to the Science Council's priorities for the CGIAR warrant its continuation.

Recommendation 2. The PRGA should stay the course and maintain its investment in participatory plant breeding.

Recommendation 3. The PRGA should strategically reconsider its role and program in Participatory Natural Resource Management.

Recommendation 4. The PRGA should accelerate its efforts to introduce gender analysis into the wider CGIAR system.

Recommendation 5. The PRGA should renew its search for the funding of a competitive grants' initiative to elicit greater cooperation from its partners particularly those in the CGIAR.

Recommendation 6. The Convening Center should take steps to promote greater interaction with the PRGA in the areas of financial management, the PRGA Advisory Board, and interdisciplinary research especially with biological scientists.

Recommendation 7. The PRGA should continue to invest in impact assessment with greater emphasis on quantifying the benefits of PPB to different groups in society.

Recommendation 8. We endorse recent PRGA efforts to publish more in peer-reviewed journals, to solicit more graduate student participation in the program, and to allocate more time to research.

Recommendation 9. We encourage the PRGA to publish good practice manuals for biological and social scientists in specialized areas of the programmatic expertise in PR and GA.

Recommendation 10. Management of the Program should become less hands-on and more strategic.

Recommendation 11. The Program should design an effective communications strategy.

TOPICAL 'ROAD MAP' FOR DISCUSSING THE TERMS OF REFERENCE

Terms of Reference*	**Relevant Section(s)**
1. Assess the clarity, relevance and appropriateness of the mission and goals of the PRGA Program regarding the CGIAR's goals and mandate.	2.0; 9.0, Rec. 1
2. Assess the mechanisms in place for setting the priorities for reaching PRGA Program's goals, the relevance of the priority themes and the strategies to reach the overall goals of the CGIAR and its partners.	2.0; 4.3; 8.3; 9.0, Rec. 7
3. Assess the efficiency and effectiveness of the PRGA Program in implementing its research and research related agenda, specifically, with respect to:	2.0; 3.0; 5.1; 8.5; Table 4; 9.0, Rec. 11
• increasing awareness and consideration of participatory research and gender analysis methods in the relevant areas of research,	6.0
• developing participatory research methodologies for broad application,	5.0
• developing guidelines for gender analysis for broad application,	6.7
• enhancing research organizations' ability to choose from a tool-kit of participatory plant breeding and varietal selection methods and approaches,	4.0; Annex 7
• identifying policy instruments that enhance involvement of users as partners in PRGA in all stages of applied and adaptive research.	4.0
4. Assess the balance between research and advocacy activities in the Program's agenda.	4.0; 5.0; 5.3; 6.1; 6.3; 9.0, Rec. 2
5. Assess the extent to which the Program has contributed to mainstreaming participatory research on one hand and gender analysis on the other hand in the CGIAR and among its partner institutions and the reasons for success or lack of it (focusing on the relevant areas of research included in the PRGA agenda).	3.0; 4.2; 4.5; 5.2 & 5.3; 6.0; 6.3; 9.0, Rec. 4
6. Assess the derived demand for the approaches based on the change in investment and effort in PR and GA research over the life of the Program at the Centers.	8.0; 8.1
7. Evaluate the relevance, quality and achievements in the following areas:	
• methodologies and conceptual frameworks,	3.0; 7.1; 7.6
• publications and other dissemination pathways,	3.0; 8.0; 8.5
• capacity strengthening,	4.3; 7.0; 9.0, Rec. 9
• institutional learning.	6.3
8. Assess the methodologies and frameworks for impact assessment in PRGA for both PR and GA.	7.1; 7.6
9. Assess the effectiveness and the efficiency of the PRGA Program's governance, decision-making, organization, accountability, resource mobilization and allocation, and mode of operation, including internal communication between	2.0; 3.0; 8.1; 8.2; 8.3; 8.4; 8.5 9.0, Recs 3, 5, 6, 7, 10

participating institutions, identification of constraints in implementing the Program and lessons learnt by both the CGIAR and its partner institutions.	
10. Evaluate the effectiveness of CIAT's convening role, including the relation between the Program and CIAT's own research agenda.	2.0; 3,0; 9.0, Rec. 6
11. Assess the need and continuing relevance of the PRGA Program.	9.0, Recs. 1 & 2
12. Review the literature on IA of PR that has been produced by the Program and its partners and others.	3.0; 8.5; 9.0, Rec. 8
13. Assess the extent to which impacts from using PR approaches have been rigorously evaluated by the PRGA Program and its partners.	7.1; 7.6
14. Specify methodological issues to be taken into consideration in assessing the impact of PR research.	7.2; 7.3; 7.4; 7.5; 7.6

* The complete text of all the terms of reference appears in Appendix II

1 THE WORK OF THE REVIEW PANEL AND ITS REPORT

The Review Panel for the Participatory Research and Gender Analysis Systemwide Initiative included a plant breeder, a social scientist, and an agricultural economist. The CVs of the Panel members and the Terms of Reference are given in Appendices I and II. In October 2006, the Review panel participated in a one-week meeting of the Advisory Board (AB) of the PRGA in Entebbe, Uganda, and subsequently visited field sites and NARS in Kenya (KARI) and Rwanda (ISAR) to see the progress of the work on mainstreaming gender analysis and participatory research in ASARECA. During the first week of the AB meeting, the panel interviewed all of the board members and PRGA staff who attended the meeting (Annex 3). One Board member was absent from the meeting. Panel members participated in most of the AB's sessions, particularly those that focused on the review. The Panel also interacted with seven NARS participants who were active in the mainstreaming gender analysis and participatory research project. The following week, accompanied by the PRGA coordinator, the Panel met with NARS scientists and visited two sites where the gender analysis and participatory research focal points practiced their training from the project. The site in Kenya was a farmer field school that focused on the cultivation and processing of newly introduced orange-fleshed sweet potato. The site in Rwanda centered around the testing and dissemination of improved bean technologies.

This two-week visit was complemented by e-mail and telephone interviews with key informants to generate information for the Panel's report. A literature review, carried out by James Stevenson, of the ex-post impact of participatory research as documented by the PRGA and its partners was an integral part of this review to both inform the Program and to identify generic issues about the impact assessment of participatory research. Complementarily to this review, the Review Panel leader, Thomas Walker, wrote a background paper on participatory plant breeding for the *World Bank Development Report*, which focuses on Agriculture in 2008.

The Panel wanted to visit participatory plant breeding activities in Syria and Nepal, but the timing of the review was not opportune to allow us to see crops in the field. A planned visit to the Himalayan Consortium in Nepal did not materialize because of scheduling conflicts. An attempt to visit PRGA sites in Vietnam proved unfeasible because of the absence of a key researcher. A prospective inquiry of CGIAR Centers on their views of and participation in the PRGA was not carried out because recent surveys by the PGRA attempting to quantify the amount and character of participatory research in the CGIAR Centers covered much of the same ground. Unfortunately, the quality of these data has deteriorated over time as the Centers seem to be suffering from survey fatigue.

The PRGA is characterized by a broad, inclusive stakeholder constituency comprised of the CGIAR Centers, NARS, NGOS, and universities, among other interest groups. The Panel's report is oriented mainly towards the CGIAR Centers and the NARS. At the AB meeting, the prevailing view was that the PRGA was doing an adequate job of reaching some of its stakeholder groups particularly the NGOS. However several staff and board members agreed that interactions within the CGIAR were more problematic and that demonstrable progress had not been made on several fronts. Therefore, we focus on the CGIAR not only because it is the locus for this systemwide initiative and looms large in the terms of reference, but also because performance seems to be below expectations in this key stakeholder group.

2 THE PRGA PROGRAM

The PRGA was the fifth Systemwide Program (SWI) approved by TAC in the 1990s. The PRGA Program traces its origin to a six-day international seminar and planning workshop in 1996 with stakeholders from more than 50 institutions (IARCS, NARS, and NGOs). A proposal for the establishment of what was to become the PRGA was approved by TAC in October 1996. CIAT was designated as the Convening Center and the proposal was co-sponsored by CIMMYT, ICARDA, and IRRI. The Program began to implement its work plan in April 1997.

Lobbying by donors, who were keenly interested in seeing the development of capacity in participatory research and gender analysis within the CGIAR system, played an important role in the establishment of the PRGA Program. The goal and purpose in the 1996 proposal (Systemwide Program Proposal 1996:2) still conveys the mission of the PRGA Program.

The Program Goal: To improve the ability of the CGIAR system and other collaborating institutions to develop technology which alleviates poverty, improves food security, and protects the environment with greater equity.

The Program Purpose: To assess and develop methodologies and organizational innovations for gender sensitive participatory research, and operationalize their use in plant breeding, crop and natural resource management.

The period of analysis for this review is roughly ten years from the inception of the Program in 1997 to the present. In the Program's documentation, these ten years are divided into Phase I (1997-2002) and Phase II (2003-2007). The transition from Phase I to Phase II was marked by a change in the Program Coordinator.

During Phase I, participatory plant breeding at about 40 percent and participatory natural resource management at 30 percent received the bulk of the budget. Capacity building and coordination accounted for about 15 percent and 10 percent of expenditures, respectively. In Phase II, impact assessment that began in Phase I and gender mainstreaming in NARS received emphasis in a more diversified expenditure pattern. Participatory plant breeding was able to maintain its momentum in spite of the relative decline in research-resource allocation. However, activity in participatory natural resource management declined significantly in Phase II.

Similar to most of the other systemwide and eco-regional programs that were approved by TAC in the 1990s, the budget for the PRGA has fluctuated between 0.5 and 2.0 million annually in U.S. dollars. In Phase I, expenditures peaked at US$ 1.7M in 1999 and averaged US$ 1.25M annually. In Phase II, average annual expenditure has declined to about 0.95 dollars annually. In real terms, the decline in expenditure between the earlier and later years has been substantial. In income, the difference between the two Phases is not that notable, but income in Phase II declined in real terms relative to Phase I. In 2006, financial stress in the Convening Center affected the Program's performance.

More than most other systemwide and eco-regional programs, the PRGA Program has benefited from unrestricted core funding that has given it stability and has allowed it to hold regular Advisory Board meetings and stakeholder workshops. Unrestricted funding accounted for about 45 percent of total income in both phases. Ten donors have contributed at least

US$ 100,000 to the Program since its start in 1997. With a total approaching US$ 2M, the government of Norway is the largest donor. Although definitive data are not available, a large share of restricted and unrestricted funds has passed through CIAT to fund multiple partners of the Program.

With one or two notable exceptions, the PRGA has been staffed by social scientists. Eight international Ph.D. scientists have worked in the PRGA since 1997. Most worked full time in the Program. An important exception is the Phase I Coordinator who spent the bulk of her time managing a large research program in CIAT. Scientific staffing did not reach its full complement until 1999-2000 when five Ph.D. scientists were employed in the program. After 2000, staffing averaged about three international scientist years during the rest of Phase I. In Phase II that average has fallen to about two Ph.D. scientists per year. Several scientists have worked in the program four or more years, which has imparted continuity, endowing the Program with institutional memory.

Based on the aforementioned budgetary and human resource information, the size of investment made in the program amounts to about US$ 10.6M and about 30 international scientist years. This level of investment is typical of the amount spent in a small CGIAR Center in one year. That is the size of the program that this Panel is reviewing. Our experience with External Program Reviews in the CGIAR is that such reviews tend to err on the side of recommending too much additional investment relative to the amount that is targeted for divestment and relative to prospects for donor funding. Returning to the size of the PRGA program, it seems realistic to assume that the negative trend in budgetary expenditure can be reversed to return to the level of funding in Phase I. Likewise, it seems unrealistic to assume that doubling or tripling the Phase I funding level can be attained in the current donor environment. Therefore, we base our recommendations on the Phase I level of activity.

A comprehensive internally commissioned external review of the PRGA was carried out in 2000, three years after the start of the Program (Prain et al. 2000). That review was chaired by Gordon Prain of CIP, and the five-person panel included two scientific staff from ISNAR and WARDA and two donor representatives from IDRC. (Gordon Prain currently occupies the position of the CGIAR representative on the PRGA Advisory Board). Additionally, in 2003, Nadine Saad, a program staff member, published a comprehensive overview of the activities of Phase I. She observed that after five years of operation, the PRGA methods were delivering broad impacts by producing technologies and resource management systems well suited to the needs of end users (Saad, 2003:2). Taken together, the 2000 evaluation and the 2003 overview provide benchmark data for an evaluation of progress that has been made during the life of the Program.

In general, the earlier review was highly supportive, stating that "the Program has made rapid and excellent progress towards accomplishing its goals and purposes (Prain et al.:4)." The 40-page report contained 59 detailed recommendations addressing the research program, management and organization, small grants, methodology development and capacity building, partners and networking, and program impact. Many of these recommendations were acted on and incorporated into the Program. Others that identified and addressed the difficulties encountered in finding focus in natural resource management research and in integrating gender analysis into the program continue to be problematic.

Before we turn to a discussion of the achievements of the Program, a word is warranted about the operational style of the PRGA. Since the beginning of the Program, work has been organized

around plant breeding and natural resource management working groups. Working-group membership comes from different types of organizations including CGIAR Centers, NARS, AROs, and NGOs. On average, CGIAR scientists have represented about 40 percent of participants. Gender analysis has been viewed as a cross-cutting theme across the two working groups. For several years, the coordinator of the Natural Resource Management Working Group was also given the responsibility of leading the work on gender analysis in the PRGA.

3 ACHIEVEMENTS

Over the past decade, the PRGA Program has registered an impressive list of achievements. The Program has contributed to the development of participatory plant breeding that was in its infancy in 1997. In its most complete form, PPB is characterized by eliciting and incorporating information from farmers into decisions on the choice of parents for crossing and by including farmers in the early stages of selection. As we describe in the next section, progress in participatory plant breeding is seen in a small but increasingly visible and vibrant conceptual and empirical literature, and in emerging success stories of cultivar adoption. The role of the PRGA program has ranged from informal and, in some cases decisive, interactions with plant breeders in the CGIAR, to the funding of PPB in NARS, to the convening of PPB thematic workshops, to the elaboration of state of the art reviews. The Program is also to be commended for its responsiveness to stakeholder demands to appoint a plant breeder as coordinator of the PPB working group. With the selection and active participation of one of the most respected plant breeders in the CGIAR system, the Program is poised to continue to make progress in this area that holds promise to improve the prospects for varietal change for poor people in marginal production regions. PPB was officially endorsed for consideration by all CGIAR crop improvement programs as an organic part of plant breeding by the 2000 Stripe Review of Plant Breeding.

The inclusive nature of the program, resulting in a multiplicity of partners, is one of the hallmarks of the PRGA. Carefully documented inventories described 48 partnership projects in Phase I and 30 in Phase II (PRGA Program 2006a and 2006b). Many partnerships in Phase I were funded via a small grants program that operated from 1999-2001. This proved to be an effective way of engaging colleagues from the CGIAR: 15 different Centers, Eco-regional Programs, and Systemwide Programs from the CGIAR participated in the small grant program. More than 20 NARS and NGO partners also took part. Since the first workshop in September 1996, periodic stakeholder workshops have figured prominently in priority setting. This seems efficient and is one of the sources of strength of the PRGA. A listing of all workshops and conferences is presented in Table 1.

The PRGA Program has always had a strong interest in research use and, arguably, has carried out more work on impact assessment than other systemwide and eco-regional programs. More than 30 impact assessment papers in the form of journal articles, book chapters, edited proceedings, monographs, technical reports, working papers, and conference presentations have been written over the past six years. Research on impact assessment has benefited from strong collaboration with an economist at CIAT and with an ex-CGIAR economist now posted at an agricultural university in an industrialized country. Both CIAT and the PRGA Program have gained considerably from these interactions that have impacted favorably the quantity and quality of this work.

The Program has produced a substantial volume of work on gender analysis and gender mainstreaming. During Phase I, Program output included many publications on GA methodologies, typologies and case studies that demonstrated the importance of including gender analysis in agricultural research. During Phase II, attention has turned to institutional change and the introduction of gender mainstreaming into agricultural research institutions, especially in the NARS. This work has progressed smoothly in Eastern and Central Africa through the ASARECA program and in the Eastern Himalayan region, through women's

networks and government organizations. The emphasis has been on gender and social analysis capacity building, gender mainstreaming, and organizational analysis.

A regularly convened Advisory Board with wide institutional representation is another strong point of the Program. It has broadly supported the Program and been especially useful as a sounding board for ideas and initiatives. The AB has helped keep a scientific focus foremost on the radar screen of the Program, ensuring that participatory research and gender analysis are regarded as scientific tools. For example, the Advisory Board supported the programmatic decision taken late in Phase I not to invest in a women-in-development initiative that was under consideration.

The PRGA publication list is impressive for its sheer volume. The 14-page list includes a brief description of each of 122 entries and averages about 12 publications per year. This number of publications seems more than adequate for a program the size of the PRGA. Moreover, the publication list is highly selective in that it does not include graduate theses that were funded by the program. The publications that are included directly related to the work of the PRGA and its Convening Center-appointed staff. Almost all publications are co-authored by a scientist employed in the Program. The publication list could be expanded to include work such as the results of small grant funding where a PRGA staff member did not figure as a co-author. In particular, several funded thesis projects and some co-funded partner research do not appear on the list.

The PRGA appears to be well managed with respect to regular reporting and budgetary accounting to donors. All information requested by the Panel was made available to us in a timely manner. The website appears to be broadly effective, and documentation seems to be one of the administrative strengths of the program.

The volume of proposal writing also demonstrates an adequate level of activity. Since implementation of the PRGA in 1997, 26 proposals have been authored and 22 have been approved for funding. Half of the 22 have been approved for a level exceeding US$ 100,000. Although IDRC has received and approved the most requests (six) for funding, the portfolio of special project funding over the past 10 years has been quite diverse. Details of submitted proposals are contained in Table 2.

Capacity building was carried out in Phase I primarily through the small grants programs and in Phase II through intensive work with NARS, aimed at organizational change. Concurrently with the small grants program, the PRGA organized a number of 'learning workshops' aimed at promoting participatory research and gender and stakeholder analysis. Training has not been a major focus of the PRGA, but over the years a number of students have completed theses with support from the Program. The Program also organized 14 international meetings and workshops between 1996 and 2005, involving almost 900 participants (Table 1).

4 PARTICIPATORY PLANT BREEDING

Participatory plant breeding (PPB) has been the most active area of the PRGA. PPB has benefited from the presence of two dynamic coordinators. The first coordinator was a respected social scientist who excelled in advocacy and also did a good job in research. The second coordinator is a respected plant breeder who is an excellent evangelist for and researcher on PPB. In the CGIAR, very strong partnerships have been developed with the ICARDA barley program and the ICRISAT-Mali sorghum breeding program. Indeed, in some areas, it is difficult to separate the work of these two plant breeding programs from the work of the PRGA. The plant breeder who, until recently, led the ICARDA barley program is now the coordinator of the PRGA working group on plant breeding. Before assessing the performance of the PRGA in PPB, we briefly describe the rationale for and definitions of PPB below.

4.1 Rationale for and definitions of Participatory Plant Breeding

Plant breeders generally evaluate segregating populations and make selections of 'finished' products (experimental cultivars) in favorable environments. Farmers' field trials are also conducted but only on a limited scale. Favorable environments are used for evaluation to maximize genetic differences, minimize uncontrolled variation, and thereby, enhance progress through selection.

This use of favorable environments and unrealistic selection criteria are generally considered to be responsible for the low adoption of improved varieties by poor farmers in marginal production regions. Evaluation in farmer fields under conditions of severe abiotic stress has been limited. Moreover, desirable genes for performance in such environments are often selected against and lost early in the breeding process.

A participatory approach to plant breeding has been suggested as a possible remedy to increase varietal change in unfavorable environments. This approach can be categorized as either participatory varietal selection (PVS) or as participatory plant breeding (PPB). PVS enlists farmer participation in evaluation and selection among the 'finished products' of plant breeding. Commercial and experimental cultivars from diverse sources are assembled and evaluated using collaborative participatory methods in the farmers' fields for traits important to farmers. PPB has a wider array of definitions than PVS. These can be summarized as (1) involving farmers in choosing parents for hybridization; (2) conducting experiments on non-finished products (segregating populations); and (3) selecting cultivars in farmers' fields. PVS is in fact a component of PPB; the difference between PVS and PPB depends on the degree and timing of farmer involvement.

PVS is a quicker and more cost-effective way of identifying farmer-preferred cultivars if suitable diversity is available. Otherwise, more resource-consuming PPB is required.

In general, PPB has focused on crops cultivated in marginal areas, crops with diverse end-uses, crops of minor importance, and those grown in marginal areas in risk prone (rainfed) and complex (intercropping) systems with low input use. These types of areas are not only stressed but also heterogeneous, and it is difficult to recreate all such conditions at research stations.

PPB is expected to enhance the response to selection in marginal areas because selection is conducted in the target environment for farmer-preferred traits (accounting for gender

differences in trait selection), to speed up varietal development, to improve the likelihood of adoption and the speed of diffusion, to increase the availability of seed at an affordable price, and to increase on-farm diversity.

PPB is also expected to improve priority setting in plant breeding, help in the development of the researcher–extension worker–farmer linkages, and to result in increased farmer's social empowerment. However, like conventional breeding, the realization of these favorable outcomes depends on the quality of partnerships and stable resources over time.

4.2 The PRGA Program in PPB

Many of the achievements on the PPB axis of the PRGA program were described in the previous section. About half of the 48 project partnerships in Phase I focused on PPB. In Phase II this number declined considerably as gender mainstreaming received relatively more attention. Nonetheless, PPB retained its momentum in Phase II, and the number of publications did not decline. Recently, the appointment of a new coordinator has helped reinvigorate the program.

One of the PRGA's most important outputs occurred in 2003 when a comprehensive monograph was published on emerging experience in participatory plant breeding (Weltzien et al. 2003). This state of the art review is still one of the best references to PPB in the literature and is based on an inventory of 40 developing-country 'cases' that were active in the 1990s. Formal-led participatory plant breeding was the population of interest. (Initiatives led by NGOs and by the private sector were not included as the bulk of cases addressed public-sector funded research). Fifteen different aspects of each case were described in the Weltzien et al. appendix that is a rich source of material to determine how participatory varietal selection and participatory plant breeding were evolving. The majority of the cases focused on participatory varietal selection or on establishing objectives for a specific plant-breeding program. Eleven of the cases were studied in detail. This inventory of experience was also the basis for a summarizing journal article by Sperling et al. (2001).

The PRGA publications have contributed to a rapidly expanding peer-reviewed literature in PPB. The most prolific authors in this literature are not the PRGA staff themselves but plant breeders who have interacted with the PRGA. From the listing of recent PPB literature presented in Annex 4, one can see a growing interest over time.

Through the plant breeding worker group, the PRGA has also indirectly contributed to the development and transfer of plant breeding methods in PPB. For example, the ICARDA barley breeding program has developed a stylized approach in PPB. The approach is basically a bulk-pedigree method featuring four cycles of farmers' selection to develop pure-line cultivars in self-pollinated crops. Responses to biotic stress and biochemical/quality traits are recorded at research stations. Selection is based on breeders' measurement of traits and farmers' preferences. Now that the facilitator of the plant breeding working group is a plant breeder more direct contributions in the area of plant breeding methodology development are expected in the future.

4.3 Responding to challenges: Real and otherwise

The Program has tackled several of the most important real and perceived challenges confronting PPB. In response to the widespread perception that PPB-derived data are difficult to analyze, the PRGA organized a workshop on "Quantitative Analysis of Data from Participatory

Methods in Plant Breeding" where the Program played an active role in educating plant breeders about the development of quantitative analysis of large data sets obtained in PPB experiments. Proceedings of the workshop were published by CIMMYT in 2002.

Public sector plant breeders in the developing world have not yet come fully to terms with IPRs on plant cultivars. In PPB, farmer stakeholders will also be involved in cultivar development, and the number of farmers may not necessarily be low. This will complicate apportionment of IPRs. In view of the importance of this matter, a workshop was organized at ICARDA in 2005 to discuss "Recognition, Access and Benefit Sharing in PPB" for both scientists and farmers.

It is generally felt that PPB, because of its decentralized approach, needs more resources in terms of infrastructure, scientific personnel, and mobility. A PRGA-inspired study of ICARDA's barley breeding program, however, showed that although the total cost was slightly higher for PPB than for a conventional approach, there were no significant differences. Furthermore, PPB generated markedly higher benefits compared to its cost than an assumed conventional program, and benefits to farmers were realized sooner. Nonetheless, plant breeders are unlikely to be persuaded by studies of expected cost effectiveness until they see more success in the field.

The Program has also had to combat the perception that PPB is not scientific or that it does not require good science. The PRGA Program has been active in capacity building by organizing five PPB-related symposia, seminars, and workshops at different places in Africa, Asia, and Latin America. There is no new genetic element in PPB. It is primarily management of decentralized plant breeding and of large data sets generated by the farmers. Thus, those working in PPB/PVS need to be proficient in experimental design and data analysis and be fieldwork-oriented. This could be a cause of concern as new graduates, because of urbanization and industrial development, have no background in and a poor knowledge of agriculture. PPB requires good breeders who can come up with workable designs on farmers' fields and who have good interpersonal skills. A significant positive development is the inclusion of PPB in the curriculum of many learning institutions. The present coordinator of the PPB Working Group has played a prominent role in the university institutionalization of PPB.

4.4 Geographic and commodity focus

The geographic distribution of the PRGA's programmatic effort has focused on some of the poorer regions of the developing world. In PVS, the geographic emphasis has been on Sub-Saharan Africa followed by South Asia and Latin America. In PPB, the two principal CGIAR collaborators with the PRGA have worked on areas known for limited varietal change in highly stressed production environments: dryland farming regions of the Middle East and North Africa and the Semi-Arid Tropics of West Africa.

Priority setting has been done with respect to crops and types of cultivars. The emphasis has been mainly on improved cultivars in self-pollinated crops where production can be retained as seed. These are crops for which the production of hybrids is not feasible commercially or the gains from hybridization are small. In other words, these are commodities that are of limited interest to private sector seed companies because the prospects for selling hybrid seed are bleak.

4.5 Enhancing of adoption of PPB/PVS in NARS and in the CGIAR

Application of PPB in the strict sense of that practiced by the leading practitioners is a fairly recent development with the first applications only starting in the mid-1990s. In contrast, PVS has been going on for several decades although its popularity in the literature mushroomed in 1991 with a publication on farmer selection of bean varieties on a research station in Rwanda from the first PPB coordinator (Sperling et al. 1993).

Table 3 summarizes the application of PPB/PVS in different crops and countries based on publications in peer-reviewed journals and some other sources. It shows that PPB/PVS has been adopted in a number of crop improvement programs in the developing world. ICARDA has been effective in setting up PPB programs in NARS in the Middle East and North Africa, and the Andes of Latin America is another region where a critical mass in PPB is developing. Once a methodology demonstrates its effectiveness on such a large scale, it is bound to be adopted by other NARS, particularly by plant breeders working on the improvement of crops of minor importance that are cultivated in marginal areas to which adequate resources are not allocated in formal plant breeding programs.

Participatory varietal selection has been a staple methodology of several CGIAR Centers, and its use sometimes predates the establishment of the PRGA. A non-exhaustive list of success stories includes CIAT's improved bean varieties in East Africa, WARDA's NERICA rice varieties in West Africa, ICRISAT's early-maturing pearl millet variety Okashana 1 in Namibia, CIMMYT's improved maize varieties in Ghana, and CIP's late blight resistant potato varieties in Peru. All of these selections have featured close partnerships with NARS working with farmers. Although more research is warranted on PVS to improve the quality and cost-effectiveness in its applications, the benefits of PVS seem so transparent that they do not point to a substantial additional investment in research.

In contrast, with notable exceptions of the ICARDA Barley Program in Syria and the ICRISAT Sorghum Program in Mali, PPB is still not widely practiced in the CGIAR. Various reasons can be given for the seemingly slow progress in the adoption of PPB in the CGIAR:

- CG centers cannot take up PPB by themselves. They need collaboration with NARS;
- The earlier approach of centralized development of breeding material is still paying dividends in important crops like wheat and irrigated rice;
- Most CG centers still produce 'unfinished' or 'semi-finished' products;
- PPB at least initially may require more resources for infrastructure, operations, and monitoring of program activities.

On the whole, much remains to be done to mainstream PPB in CGIAR institutes.

Breeders in NARS and in the CGIAR may question the knowledge of farmers about germplasm, or the utility of growing a segregating population in the farmers' field under their management, as this may enhance non-genetic variation due to poor management and non-uniform effects of various stresses under natural conditions. Also in question is the efficiency of farmers to conduct selection. Decentralized work is difficult to operate and monitor, but no plant breeder can argue about the utility of evaluating the material and conducting selection in a target environment and basing the selection criteria on farmer-preferred traits. Further, a plant breeder would like to go

to a farmer's field (target environment) with as much material and as early as possible in the breeding process, subject to the availability of resources. So given the resources, some form of PPB may be adopted by all the breeders working to improve crops in marginal areas particularly in weak NARS; and PVS, particularly, should face no opposition.

4.6 Evaluating the early impact of PPB

The impact of improved varieties generated via PPB is beginning to be felt in farmers' fields in marginal production regions. Of the two CGIAR programs with which the PRGA is most closely associated, the ICARDA barley program is the oldest and the adoption of its PPB-selected varieties now extends to several thousand hectares in Syria. The ICRISAT Sorghum Program in Mali is significantly younger, and it is too early to expect results until the anticipated next phase of the PRGA program.

Researchers working in CAZS-NR at the University of Wales, Bangor, U.K., have also been very active and successful in PPB/PVS particularly in South Asia. They have partnered mainly with NGOs and NARS and have interacted frequently with the PRGA. They have published five success stories in the peer-reviewed literature on the adoption of PPB-selected cultivars. Their work underpins several of the conclusions of a review of the impact of participatory research that is described in Chapter 7 of this report. They have also found that niche varieties derived from PPB may be more widely adapted than previously thought. All the CAZS-NR work is carried out on-farm and they have developed a flexible protocol for the use of PPB. They estimate that PPB-generated varieties by them in collaboration with their partners are now on about 100,000 hectares in South Asia, mainly in Nepal. (J.R. Witcombe, personal communication, 2006).

PRGA-related research has also brought out some differences between the selection criteria used by plant breeders and farmers, and differences between types of farmers. This indirect benefit of PPB and PVS is likely to become pronounced as more crop improvement programs engage in marker-assisted selection. Knowing the demand for traits by farmers is a necessary condition for effective marker-assisted selection.

Important differences have been seen in evaluating the relative importance of various end-uses in dual purpose crops like barley, e.g., grain for human/industrial use and straw to feed animals. Crops with multiple uses seem to be particularly attractive for PPB, as plant breeders tend to focus more on the dominant use and do not fully appreciate the relative importance of traits associated with various end-uses. Further, dual uses, such as food and feed, may not be farm-size neutral. In pearl millet in India, poor farmers in marginal areas select for high tillering and small panicle size, whereas better-off farmers in good-growing conditions prefer low tillering and larger panicle size. The demand for traits and the elicitation of preferences is one of the core areas of strength of the PRGA but more training materials could focus on this area.

PPB also offers a mechanism by which the PRGA can influence policy through technological change. PPB is affected by and can affect policy on several fronts: public sector varietal testing systems, cultivar release procedures, and seed production systems. Relevant guidelines and legislation have been developed keeping in view formal plant breeding. The success of PPB has been instrumental in bringing a change in policy in Nepal where the cultivar release and registration procedure has been made more flexible to better account for the needs of clients.

The Nepal Government endorsed this procedure in 2005 and varieties have been released through joint (NARS, CAZS-NR, NGOs) proposals.

A notable instance of PVS success that may influence policy has been in barley in Syria. Barley 'Zanbaka' was submitted in the early 1980s to the official system of varietal release, but was rejected at that time. It has since been identified through PVS and is becoming a popular cultivar.

4.7 Assessing prospects and making recommendations

PRGA emphasis in PPB has the correct geographic and commodity orientation. This approach has a focus on marginal areas that have been by-passed by advances made through improved cultivars. PPB also appears to have relevance to favorable environments wherein yields may have peaked at a high level, and exploiting specific adaptation is an avenue to effect further progress. Pure-line cultivar development in self-pollinated crops is rightly receiving top priority.

The PRGA needs to keep addressing the challenges confronting PPB, because being a decentralized program it may not be easy to manage. Further, there are policy issues like varietal release, seed production, and IPRs that still need attention. Moreover, the cultivars developed through PPB are expected to have small-scale impact as these generally have specific adaptation to various niches in marginal environments. This specific-adaptation hypothesis needs to be rigorously tested as is done in the case of Nepal, where PPB-selected cultivars are submitted to regional and national trials for wider testing and subsequent release.

Instead of projecting PPB as an alternative to conventional plant breeding, efforts need to be made to integrate both. On the whole, the Program needs to document more success stories, describe thoroughly the protocols followed in those studies, and publish more manuals, bulletins, and guidelines. There should be more in-service training and workshops and a select group of scientists should be regularly brought together. This is important in part to remove misconceptions about the role and ability of plant breeders. Above all documentation needs to focus on what PPB can accomplish that does not happen in conventional plant breeding. Small grant projects have played a very useful role in promoting PPB, but their coverage is still small. Grant awards with a longer duration are desirable.

The lack of adoption research and absence of data on seed production in self-pollinated crops limits the assessment of the impact of varieties developed through PPB. A high priority is attached to adoption research on the early acceptance and subsequent diffusion of PPB selected varieties.

PPB is a good entry point for participatory research and gender analysis, and should be used as a vehicle for social change and poverty alleviation. To attain that goal the PRGA program needs to be strengthened and the collaborative activities expanded in the next phase.

5 PARTICIPATORY NATURAL RESOURCE MANAGEMENT

Compared with PPB, Natural Resource Management has had a checkered history in the PRGA program. The NRM component of the Program started later, staff turnover has been higher, focus has been difficult to achieve, and relatively little research and capacity building has been carried out on NRM in Phase II.

5.1 Describing the level of activity

PRGA's investment in NRM began with a listserv that was established in 1997, but this was insufficient to satisfy the needs of the Program's clientele. In 1998, a Ph.D. level coordinator was hired to address both the gender and NRM areas of the Program. She left the program in 2000, her major achievement having been the organization of an 'NRM Scientists Group' (Prain et al. 2000). In 2000, a crop ecologist was contracted as a part-time consultant to stimulate networking among NRM practitioners interested in PRGA. She facilitated the NRM working group until 2004. Other PRGA scientific staffers also have worked on NRM for short periods of time.

NRM featured prominently in the small grants initiative that was described in the achievements section. BMZ, the Ford Foundation, and unrestricted core funding supported the NRM component of the small grants program. In Phase I, ten NRM-related project partnerships were developed, the majority supported through the small grants program. Substantively, these ten projects all addressed different areas of NRM ranging from a very specific focus on the effects of stakeholder participation on the adoption of improved land management on Vertisols in Ethiopia to the generalized treatment of the impact of farmer participatory research in natural resource management in Zimbabwe. Other substantive NRM areas included community forestry, nutrient management, pest management, and disease management. Several projects shared the same objective: an evaluation of participatory research approaches on project outcomes, which seems central to the mandate of the PRGA.

A major NRM-related work was published in Phase II: *Managing Natural Resources for Sustainable Livelihoods: Uniting Science and Participation* (Pound et al. 2003), but this 252-page book was the result of a 1999 workshop, "Participatory Research for Natural Resource Management: Continuing to Learn Together." Attending scientists were nominated by their peers for their involvement in innovative Participatory Natural Research Management in order to strengthen interchange with the Program's international working group.

Despite the paucity of NRM research in Phase II, the NRM working group seems to have remained active. The Program maintains a PNRM Resource Center as part of its website. The Resource Center presently contains downloadable lists of 100 recommended websites, 19 reflections, 10 collaborative products, 11 recommended articles and books, 946 resources developed by PNRM members, and 47 recommended tools and methods.

5.2 Identifying the problem of focus

The problem of focusing integrated natural resource management research was foreseen and eloquently expressed in the founding proposal: "A comparable disquiet is evident over the difficulty of achieving impact for this research in heterogeneous, fragile environments, with diverse client groups" (pg. 8). Even during Phase I, when NRM research was being carried out, there was a lack of focus. The internal review of the PRGA was commissioned while the small

grants program was active and the review concluded that: "The diversity of subject interests (soils, IPM, forestry etc), levels of focus (micro, meso and macro) and philosophy (technology and management tools or developmental process) in both the NRM Scientists Group and the small grants makes it very difficult to arrive at a coherent program component. In practice, NRM is too broad a focus for the Program to deal with, especially given the fact that currently the part-time Coordinator of the PRGA Program is also in overall charge of the NRM small grants activities" (Prain et al., p. 19).

To improve focus, the authors of the review suggested three options for consideration by the PRGA leadership: (1) Limit NRM projects to those which include PPB.; (2) Identify one or two focal themes for NRM; and (3) 'Piggy back' a PRGA component on existing, funded NRM activities which lack this aspect.

Although these options may have been seriously pursued by the Program, none have come to fruition in Phase II. Consequently, NRM has a low profile in both project partnerships and in publications. Eighteen partnerships are listed under the title of "Mainstreaming of Participatory Research and Gender Analysis in Agricultural and Natural-Resource Management Research" but the partnership descriptions suggest that only a few of these are linked directly to NRM. Some of the impact assessment research carried out in Phase II did focus on NRM, with three studies on the impact of PR and soil management technologies.

5.3 Considering options to improve focus

Each of the three options posed by the internally commissioned review panel has positive and negative aspects. In the short-term, the 'piggy back' option is the most easily achieved, especially if a strong partner can be found. That partner or someone working with him/her could also assume the role of coordination of the NRM scientists' group. Experience suggests that the coordinator/facilitator should have strong academic and research credentials and already be engaged in a well-defined area of natural resource management. It would be ideal to find someone with a profile comparable to that of the current PPB facilitator.

The option of locating PRGA-related NRM research in the same areas of PPB research supports a move towards a much tighter focusing of the Program and could reinforce the linkages that exist conceptually between NRM and PPB. But, it begs the question of how the site-specific NRM research is to be funded. Moreover, researchable NRM-related problems may not be that relevant or important in the PPB sites.

In the medium term, a greater focus on specific factor-oriented research (Option 2) would seem to be the best way to attain a coherent program for the NRM component. A thematic focus also needs to find strong partners for interdisciplinary research to be successful. The strong research areas of CIAT would seem to be logical initial starting points for developing longer-term partnership with the PRGA. A thematic focus has several advantages. It would open up the potential for historical studies of farmer innovation and farmers' interactions with science in the generation and adaptation of technology. It would provide the basis for 'strategic' research over space and time. Working for several years with specialist scientists on a specific area, e.g., soil management or IPM, would also enhance the agricultural background of social scientists in the PRGA. A deeper understanding of what technologies work, when, where, and why is highly complementary to research on PR and GA.

Regardless of whether the program opts to adopt one of the options discussed above, it is clear that the NRM component of the PRGA urgently needs to be reconceptualized and revitalized to address natural resource management issues from the perspective of participatory research and gender analysis. During the past few years, natural resource management has received increased attention from donors and there is an opportunity for PRGA to select appropriate entry points that will bring added value to work that is already underway. There is interest in pulling together inventories and overviews of what 'works.' For example, DFID is putting approximately US$ 70M into a global view on 'research in use' with a big focus on NRM. Moreover, an overarching theme for much of the current donor interest in NRM is the UN Millennium Development Goals, which highlight environmental sustainability, the eradication of poverty and hunger, and the promotion of gender equality and empowerment of women. These themes are consistent with the overall mission and objectives of PRGA and provide entry points for work in NRM.

While it is not the role of the Review Panel to identify areas of concentration for the NRM work of the PRGA, a few areas that might warrant further consideration because they build on the interdisciplinary approach of the program, include the development of new institutions for resource governance that give greater voice to poor local users, ecosystem health, and multi-stakeholder collaboration. The decentralization of agricultural research with an accompanying impetus to organize farmers into associations opens up avenues for the PRGA to conduct research and advocacy on the effective role of stakeholder groups in priority setting in both crop improvement and natural resource management.

At the same time, the Program has the potential to bring a participatory research/gender analysis approach to emerging areas like Climate Change, for example, building on work already being done in the CGIAR on climate resilient crops. There are also opportunities for collaboration with on-going Challenge programs such as Water, Generation, and HarvestPlus.

Finding an effective alternative in the broad research agenda described above seems doable. In Phase I the program raised about US$ 3M in special project funding (see Table 2). The donor supply of funds appears to be significantly more constrained for participatory plant breeding than for participatory natural resource management.

In the case of NRM in the PRGA, the time may be ripe to redraft the mission statement and focus on those areas that the PRGA is good at or is making reasonable progress on: participatory plant breeding, impact assessment, and gender mainstreaming. If the expected level of interdisciplinary-research activity in NRM in an anticipated Phase III only rivals that of Phase II, there is no reason to keep up the pretense that substantive work is being conducted in this area. The leadership of the Program may want to establish a deadline for the successful implementation of one of the options described above. If the deadline comes due without successful implementation, then the program's mandate should be re-fashioned accordingly. It is better to address this programmatic area of weakness directly and systematically, than to have it lingering on for another Phase.

6 GENDER ANALYSIS

6.1 Background

The original Gender and Diversity program of the CGIAR system, established in 1991, had two components, one related to gender staffing in the CGIAR and the other to the use of gender analysis in research. In the mid-1990s this program was dissolved, and in 1997 the gender analysis component was absorbed into the PRGA. The staffing component retained the Gender and Diversity (G&D) title and was relocated to ICRAF in Nairobi.

The Gender Analysis component of the PRGA was seen as a cross-cutting issue that would be integrated into the two substantive program areas: participatory plant breeding and natural resource management. This was consistent with thinking in the gender and development research and advocacy community at that time. The Platform for Action that emerged from the Fourth International Conference for Women in Beijing in 1995, urged the mainstreaming of gender into all development institutions and projects. Probably for this reason, the component did not have a dedicated facilitator.

At some level, the consolidation of participatory research and gender analysis into one program area seems to have created uneasiness. At the first meeting of the PRGA's Gender Working Group in 1996, before the Program was officially launched, gender analysis was identified as a field of methodological expertise but not necessarily as a central component of participatory research (Fernandez 2001). Given this ambiguity, even among PRGA core staff, about the natural fit of gender analysis and participatory methods, it is not surprising that the Internal Review of 2000 noted that "[gender analysis] integration into the participatory research focus of the program is not consistent" (Prain et al 2000:20).

The 1996 proposal for the PRGA expressed expectations that the program would develop gender sensitive technologies that would become widely used within the CGIAR system and by NARS and NGOs. Two specific areas that were to be addressed included gender mainstreaming and gender analysis capacity building, and the intention was to develop "More efficient, cost-effective diagnostic methods which will serve as initial probes to determine the gender-specificity of a prototype technology. Researchers need sharper methods to understand when differentiating users by gender will be of critical importance; and farmers need tools to help them choose appropriate participants in a joint research effort" (Systemwide Program Proposal 1996:2-3).

The program made some early progress towards fulfilling these objectives. For example, a project entitled "Assessing the Benefits of Rural Women's Participation in Natural Resource Management Research and Capacity Building" tried to mainstream gender sensitive participatory research through small grants projects that were added on to larger CGIAR projects. GA- related research output in terms of publications and presentations was high during Phase I. The intention was to build a body of evidence to demonstrate that the adoption of participatory research and gender analysis methods could contribute to the 'technical' goals of agricultural research.

6.2 Staffing

As noted, the gender component did not have a dedicated facilitator during Phase I. Consultants were used on an as-needed basis and all core PRGA staff were expected to promote the use of gender analysis where possible and appropriate. In 1998, presumably in an effort to better promote mainstreaming of gender into all of the Program's research, the gender component was combined with the NRM component and put under the management of a single coordinator. Unfortunately the net effect seems to have been a reduction of time and energy given to the gender component. The 2000 evaluation noted that "the gender component of the PRGA has not been well-defined, nor has it sufficiently evolved with the rapidly changing thinking around social analysis" (Prain et al. 2000:20). The program supported gender-related work after 2000, but it was only in October 2004 that a gender coordinator was appointed on a part-time consultancy basis (until the end of 2005). She was hired to facilitate improved interaction between the Program and the CGIAR centers but as the ASARECA project developed, there was a considerable need for training activities and most of her time was deflected into this area.

6.3 Gender mainstreaming

During Phase II, the Program's attention shifted from small grants projects and gender training to gender mainstreaming and organizational change. The goal of the second phase was "to mainstream gender analysis and equitable participatory research to promote learning and change through partnerships with CG Centers, national agricultural research systems (NARS) and civil society groups, so that they can better target the demands of beneficiary groups, particularly poor rural women" (Gurung 2006).

A systematic approach has been followed. It recognizes that gender mainstreaming requires policy change, the identification and implementation of accountability mechanisms, the development of appropriate capacity, and institutional change within prevailing organizational cultures. Gender analysis methods have been defined as encompassing diagnosis, implementation, and tracking of impact. At the same time, efforts have been made to introduce institutional capacity building, using institutional analysis methods, such as organizational development concepts and framework analysis. With this approach, the PRGA has given attention to building skills in change agents in the area of leadership (especially among women), negotiation, and facilitation. Recognizing that commitment is required from institutional managers, the program has organized strategic planning meetings that have led to creating action plans.

Despite the advocacy function that is also implied in the Program's gender mainstreaming goal, the focus has been primarily on research and on monitoring change within organizations. Building a constituency of gender researchers and practitioners inside the CGIAR beyond those who are directly receiving support from the Program seems to have been neglected. For example, although there have been active listservs discussing participatory plant breeding and participatory natural resource management, there has never been one focused on gender analysis. This probably reflects the staffing decision to not have a full time gender facilitator/coordinator, except for a relatively short period.

There are different views about the advocacy function among PRGA staff and AB members. Some argue that advocacy and training can be better handled by the CGIAR G&D program and that the PRGA should focus on training technical people who can take forward gender analysis

within different institutions both inside the CGIAR system and in the NARs. This position seems to have been the prevailing one over the past few years. It also is worth noting that Saad warned in 2003 that the use of gender analysis methods may be too fragmented within the CGIAR system to enable them to be mainstreamed (Saad 2003: 14).

6.4 PRGA gender focus

In examining the language used in the PRGA program documentation, there is a clear emphasis on 'gender,' 'gender analysis,' and 'gender mainstreaming' but many of the program's activities continue to fall into the women in development perspective, i.e., providing women with opportunities to participate in technology development, giving them access to resources, soliciting their input, etc., without examining the social context of the power relations between men and women. Efforts are being made to move beyond this perspective and some of the organizational change work that has been done during Phase II begins to address the issue of gender equity. Recently published work on the gender dimension in social capital also begins to address the different social, economic, and political contexts within which women and men work (Westerman, Ashby, and Pretty 2005). Given the lack of a dedicated gender research coordinator, it is not surprising that the Program has made slow progress in addressing the conceptual and methodological aspects of this problem (which poses equal difficulties for other research-supporting organizations). This does appear to have been a 'missed opportunity' for the PRGA and an area where an important conceptual contribution could be made.

6.5 What has been the influence on the CG system?

By the late 1990s, gender analysis was becoming somewhat more prominent in research undertaken within the CGIAR system. According to inventories of gender-related research and training done in the IARCs for 1990-1995 and 1996-1998, gender-related work increased substantially within that period. One hundred and forty activities were listed in 1995, whereas in 1998, 207 were listed, representing an increase of 48 percent. Although the two datasets were not methodologically identical, they suggest that that during this period, which coincided with the establishment of the PRGA program, the use of gender analysis tools and methods was growing overall (Feldstein 1998). This suggests that the late 1990s may have been an opportune time to influence research within the CGIAR system.

An obvious starting point for collaboration within the CGIAR system should be the Gender and Diversity Program. Over the past decade, the G&D program has achieved high visibility both inside and outside the CGIAR system. This has been done through a number of strategic partnerships with high profile individuals and through collaboration with outside organizations including donors and others that promote women in science. Currently the G&D program has identified more than 200 focal points or champions in the CGIAR system.

Collaboration between PRGA and G&D has been sporadic. Although the primary interest of the G&D program is to ensure that women scientists are given appropriate career opportunities within the CG system rather than to promote research, there is some overlap between the objectives of the two programs. PRGA documentation notes that "[its] less emphasized strategy has sought to empower women in R&D positions within the CG family but also in partner organizations and selected women's organizations with a strong R&D component activity, . . ." (Framework for Assessing PRGA Program Activities, n.d.). At the same time, one of the three current objectives of the G&D program is to "Integrate gender and diversity practices into the

core work of the CGIAR Centers through closer collaboration with scientists, research teams and other global initiatives and Systems Office units of the CGIAR." (http://www.genderdiversity.cgiar.org/about/default.asp). It is clear that there is some overlap in the mandates of the two programs.

The PRGA project staff has met with the leadership of the G&D program on several occasions, but there has not been follow-up. Given the difficulty in introducing gender concepts into the CGIAR system, the formation of a closer, mutually-supportive link between the two programs would appear to be highly strategic.

Strategies for institutionalizing gender in the CGIAR system were discussed during a session at an Impact Assessment Workshop at CIMMYT in October 2005. Many good ideas were proposed but there was no concrete follow-up. In fact, a number of CG centers are actively involved in gender-related research. Probably the most progress has been made at IRRI in both substantive research on gender and on gender mainstreaming. IRRI has a senior internationally recruited scientist on staff with the responsibility to institutionalize participatory research and gender analysis in problem oriented research, in collaboration with NARES. Her team has made advances in participatory varietal selection (using mother-baby trials and including women as consultants, evaluators and farmer cooperators) but they are still struggling with NRM, except for seed health management. Almost all on-farm experiments on rice varietal improvement now use the mother and baby trials (researcher-managed and farmer-managed) approach and women are well represented. IRRI has also invested time and resources in a training course on Participatory Approaches to Research and Extension. The course, which is aimed at participants from NARES involved in collaborative research in South Asia and Southeast Asia, includes lectures on gender analysis and the importance of including women as users of technologies. Most of the scientists in the teams are non-social scientists and the course provides biological scientists with a social science perspective. Finally, IRRI has produced simple guidelines for mainstreaming gender in rice varietal improvement and crop management. These and other tools are used in their training courses and have been posted in IRRI's Knowledge Bank, which can be accessed through the internet (http://www.knowledgebank.irri.org/). ICRISAT and ICARDA also have taken initiatives in promoting work on gender analysis and are actively seeking to incorporate gender into many of their projects. ILRI undertook an internal audit on gender-related activity in some of their partner institutions, which led to a regional workshop and provides an example to other centers of a way to move forward. Given this level of interest and expertise scattered throughout the CGIAR system, the PRGA has a rich base from which to work towards institutionalization of gender into the CGIAR research and management.

6.6 Influence on the NARs/NGOs

The gender mainstreaming work, which concluded at the end of 2006, was undertaken in collaboration with ASARECA in eight countries in central, eastern, and southern Africa. Both male and female professionals with degrees in science, social science, and agriculture were identified as gender focal points in agricultural institutions in the region. Research and capacity building activities focused on gender analysis, organizational change within NARs, training of trainers, institutional assessment of the level of gender awareness within the different NARs, and some field research. To a lesser degree, there was also emphasis on gender lobbying and negotiation.

Each country pursued these objectives in slightly different ways and progress was uneven. For example, in Kenya there has been considerable achievement and the program received a strong endorsement from the Director of the Kenya Agricultural Research Institute (KARI), but in Rwanda progress was much more modest and the Institut des Sciences Agronomiques du Rwanda (ISAR) did not have the same level of institutional commitment nor expertise. Even in Kenya, there have been considerable obstacles to the widespread incorporation of gender analysis into the work of KARI, including limited gender analysis expertise; a low level of integration of gender analysis into KARI projects; financial limitations, etc. However, KARI has developed innovative ways of coping with these problems, for example, by presenting an award at their annual conference for the most gender sensitive paper. Other countries are at different stages but for the most part not as advanced as Kenya. For example, in Ethiopia a gender action plan is currently being developed. It is also worth mentioning that the countries started from different points in terms of stock of available gender expertise and earlier exposure to gender analysis.

During Phase II, work was also carried out with women's networks in the Eastern Himalayan region, in a project that focused on providing training in social and gender analysis to help local organizations to understand the differential impacts of resource degradation and NRM practices on different segments of the population. Working in Bangladesh, Bhutan, China, India and Nepal, the project produced a set of 'good practices' for mainstreaming gender sensitive participatory research and development approaches within selected organizations. Best practices emerged through capacity building, including training and mentoring/ coaching and through research on organizations. The project helped to bring about new levels of awareness of social and gender issues among professional men and women in agriculture and NRM organizations in the eastern Himalayas and Laos.

These two large projects seem to have had a positive influence on NARS and NGOs in the regions where they were organized. They were organized in such a way to ensure ongoing impact even after the end of PRGA involvement.

6.7 Achievements and continuing challenges

During Phase II, the Program made good progress with mainstreaming gender through ASARECA and the Himalayan Consortium. There was also some earlier success with the Andean Consortium. Based on what the Review Panel observed in East Africa, however, it is not likely that gender mainstreaming has been sufficiently institutionalized in most of the participating NARS (with the possible exception of Kenya) for it to continue as a prominent activity after the completion of the PRSA financial support.

Over the years, and especially during Phase I, the Program developed a rich literature of guides, typologies, empowerment indices, and checklists aimed at helping NRM researchers to use gender analysis in their work, e.g. Fernandez, Assessing Impacts of Participation: Stakeholders, Gender and Difference (2000); Lambrou, A Typology: Participatory Research and Gender Analysis in Natural Resource Management (2001) and Lilja and Ashby, Types of Gender Analysis in Natural Resource Management and Plant Breeding (1999). These are useful publications that give sound advice on how research can be made more gender-sensitive. None of them was intended to be prescriptive, and most conclude that both PR and GA must be adapted to suit the needs of each specific situation. Unfortunately, there is no evidence that the publications have been used (or even promoted) in a systematic way. While the focus of the

program has moved towards impact assessment in recent years, it is unclear if the use of gender analysis in PRGA or PRGA-linked projects has been evaluated from an impact perspective. However, a 2001 study by Johnson, Lilja, and Ashby that looked at the use of participatory research and gender analysis in natural resource management research concluded that a large proportion of projects that did include some aspect of gender analysis did so at the technology transfer stage where efforts were made to ensure the technology could/would be used by women. Gender concerns were less likely to be taken into account at the technology design stage.

Research by Kaaria and Ashby in 2000 (PRGA Working Document 13) concluded that scientists and development agencies must make proactive efforts to ensure that women will participate in and benefit from technical change. They also developed a strategy that international agricultural research centers could use to ensure women's interests and perspectives were integrated into their work. The strategy included the identification of priority geographical areas of the world where feminization of agriculture is hypothesized to be under way; participatory diagnosis of poor rural women's technology needs; constraints and opportunities; partnerships with CGIAR and NARS applied research programs with a capacity for developing technologies for women; designing technologies that address both pre- and post harvest needs; establishing a long-term panel of rural women's focus groups to identify and analyze women's changing demand for agricultural technology; and establishing rural women's focus groups in the panel as a network for regular CG and NARS consultation on the diagnosis of needs and the evaluation of technologies (Kaaria and Ashby 2000). These ideas were never implemented by the PRGA. If they had done so, it is quite possible that this would have led to more systematic inclusion of gender analysis in the work of the CGIAR scientists. Instead of trying to test this and other strategies and methodologies that were developed in Phase I, attention in Phase II turned to other issues.

Gender analysis was not included in all PRGA work. For example, much of the participatory plant breeding studies, while innovative in their own right, did not include gender analysis (e.g., Fukuda and Saad 2001). Researchers were not required to disaggregate the term 'farmer' so there is no way of knowing whether male and female farmers participated and, if they did participate, whether their perspectives and opinions were the same. This is an important point because it goes against the overall mandate of the PRGA program. Moreover, the inclusion of sex-disaggregated data would have allowed for later analysis by other researchers with particular interest and skills in gender analysis. Similarly, a conceptual model for participatory research for sustainable agriculture developed by the PRGA did not include gender analysis as a basic component (van de Fliert and Braun 2001). At best, the use of gender analysis has been inconsistent in PRGA projects. A paper also published in 2000 on characterizing and measuring the effects of incorporating stakeholder participation in natural resource management (Johnson et al. 2001b) included gender analysis. Similarly, Sanginga, Lilja and Tumwine incorporated gender analysis into their assessment of the quality of participation in farmer's research groups in the Kabale Highlands in Uganda (2001). This gives the impression that gender analysis was included if the subject was of interest to the research team. For a program that was intended to promote the use of PR and GA, a more proactive approach might be expected.

Overall, it could be concluded that the PRGA research work on gender has focused more on the development of conceptual models and tools and less on systematic testing and utilization of these models and tools. If the Program is to continue into a third phase, attention should be given to the testing, fine-tuning and use of the approaches that were developed during the early years. More work should also be done on the power issues and differential control over

resources that are embedded in 'gender' analysis as compared to a 'women in development' approach. The Program has started to do some valuable work in this respect through its focus on organizational change but care will have to be taken to ensure that the focus does not move away from 'gender' and more squarely into organization theory. A recent paper published in World Development (Westerman, Ashby, and Pretty 2005) also begins to unpack the nature of male and female group activities and collaboration in the context of natural resource management.

7 IMPACT ASSESSMENT

In this section, we evaluate impact assessment in the PRGA program and later summarize the results of a desk study, A Literature Review of the Documentation of Ex-Post Impact of Participatory Research with a focus on work by the PRGA Program and its Partners that is an integral part of this review.

7.1 Impact Assessment in the PRGA

Impact assessment has been and continues to be one of the most active areas in the PRGA. An economist with expertise in impact assessment and gender research joined the Program in 1999. In 2000, the internally commissioned external review recommended that "The PRGA should continue to conduct systematic impact assessment to generate convincing evidence about the usefulness of participatory methods for improving research efficiency, targeting specific beneficiary groups and meeting CGIAR goals of poverty alleviation and protecting the environment (Prain et al., p.33)." The authors of the review further stated that "The PRGA's efforts to strengthen its capacity to monitor and assess impacts are highly commendable. PRGA is encouraged to maximize use of internal and external resources through collaboration."

The PGRA has implemented these recommendations in a consistent fashion. Impact assessment has figured prominently in both phases of the Program. A gamut of work has been carried out. The expected impact of participatory plant breeding has been quantified and compared to the expected impact of conventional breeding. Case studies of innovative PR-using projects have been synthesized with regard to the impact of participatory research on diverse outcomes. State-of-the-art conventional ex-post impact assessment focusing on the consequences of PR has been conducted on one of the more important success stories of the Convening Center. Resources have been mobilized within and outside the Convening Center in undertaking this research, which is increasingly visible in the CGIAR. CIMMYT, CIP, and ICARDA have been among the most active partners with the PRGA in the assessment of the impact of participatory research in the CGIAR.

The Program has also invested in capacity building and the dissemination of information on impact assessment mainly through the workshop organized with CIMMYT in 2005. The goal of that workshop was to share experience and learn more about the measurement and impact of participatory research and gender analysis. Several lessons were teased out of the 25 case studies that now appear on the PRGA Website.

Impact assessment on the effects of methodological approaches and institutional programs, such as PR and GA and the PRGA, is a daunting task. Outside of agriculture, costly experimental research in a with-the-program and without-the-program setting is an important way to assess programmatic consequences. In the 1996 'founding' proposal for the PRGA, controlled comparisons of different strategies, i.e., the same breeding populations are managed with and without farmer participation, were proposed as part of the empirical studies that were to be the basis for impact assessment (p. 17).

We only know of one case (on potato breeding in Bolivia) where an experimental programmatic approach has been carried out in PPB, and, while interesting and of potential importance, we do not recommend research in this experimental vein be implemented at this time until PPB matures into a more well-established methodological approach. Presently, investing in highly

focused experimental studies that pit the most relevant components of emerging PPB models against each other would seem to have a higher priority than wider experimental comparisons of PPB vis-a-vis conventional breeding.

The 'founding' proposal was optimistic that "through empirical studies and comparative data, it will be possible to assess the payoff to participatory methods and gender analysis in different stages of research (p. 3)." The PRGA has been successful in designing a comprehensive and thought-provoking model for assessing the impact of PR and GA. The model is fully described in the 2001 Working Document 17: *Characterizing and measuring the effects of incorporating stakeholder participation in Natural Resource Management Research: Analysis of research benefits and costs in three case studies.* The PRGA model was one of the bases for the literature review. We expect that it will be increasingly used to assess the impact of participatory research particularly in adaptive research projects.

Working Document 17 compares outcomes from participatory research in three innovative projects: (1) one of the first uses of a Farmer Field School as a research and extension tool on a non-rice crop by CIP and its partners on sweetpotato improvement in Indonesia, (2) the use of a 'new' on-farm research method of mother-baby trials by ICRISAT and its partners to promote the incorporation of legumes in the soil fertility management of maize production in Malawi, and (3) the well-known ACORDE-World Neighbors (WN) integrated development project that promoted the use of improved soil management and conservation practices in Honduras.

The authors of the report formulated 22 hypotheses for testing that cut across 5 impact outcomes, 3 stages of technology generation and transfer, and 4 levels of intensity in farmer participation (See Annex 5). Focus was on the economic impact of technologies, social and human capital impacts among beneficiaries, feedback to formal research, and cost of research in technology design, testing, and diffusion. The results were summarized by six key questions that were synthesized from the original PRGA proposal to TAC to arrive at a judgment on whether or not participatory research makes a difference (See Annex 6). This innovative, comparative research fits squarely within the mandate of the Program and provides a valuable background for the Panel to identify areas of improvement for PRGA research on impact assessment.

7.2 Use of on-farm experimental data

In this comparative evaluation and in several of its other studies, PRGA impact assessment research rarely exploits the results of on-farm experimental data. Instead of using on-farm trial data complemented with early acceptance studies of the most important novel technology components, the preferred method seems to be to focus on with-and-without comparisons of participant and non-participant groups. Such comparisons are necessary for the evaluation of early adoption and methods are now available to correct for selectivity bias and 'match' non-participants to participants, but inter-group comparisons are usually an inferior basis for benefit calculation if reliable on-farm experimental trial data are available.

The first case study on improved crop management in sweetpotato is an apt example of where reliable on-farm experimental data could have shed light on the economic value of conducting adaptive research on a minor crop in a weak NARS setting with a farmer field school approach. The comparison between participants and non-participants indicated a small mean yield advantage of participants of about 5%. Yet analysis of an earlier baseline survey showed that both participants and non-participants had not purchased the single-nutrient fertilizer potassium

chloride prior to the start of the multi-year farmer field school. Almost certainly, the use of potassium could be attributed to the project and the use by participants had spilled over to non-participants, but the estimated yield advantage from the participant and non-participant comparison was almost too small to justify the farmers' investment in potassium. On-farm trials with plus and minus potassium would have provided data to validate the worth of the project and farmers' adoption behavior. If the productivity effects of potassium were large in the on-farm trials, then the analyst could investigate the effects of expanding the extension message on potassium by estimating the representativeness of the soil series on which sweetpotato was grown to determine the regional extent of potassium deficiency.

One of the main messages in this case study should have been that the use of a farmer field school as an adaptive research tool needs to be complemented by simple on-farm trials featuring single components as treatments and the farmers' technology as a control. Without reliable on-farm trial data, it is difficult if not impossible to piece together and subsequently tell a persuasive story of impact. Comparisons that are aimed at separating yield and crop income differences between participants and non-participants often become a black box generating estimates that defy common sense even when multivariate analysis is well-conducted.

In the second case study, the participatory research project on the incorporation of legumes in sole-crop maize systems was characterized by negligible economic impact, but the mother-baby experimental trial approach has rapidly diffused to NARS in southern and eastern Africa mainly via the CIMMYT maize breeding program. The small Rockefeller-funded ICRISAT Program on soil fertility management in Malawi has been the most important source of change in mainstreaming participatory research in SSA during the life of the PRGA. The mother-baby trial approach has most likely been readily adopted because it is a simple recipe for on-farm research. Outside the PRGA, mother-baby trials have also been effectively incorporated into participatory plant breeding. Although the mother-baby trials did not receive high marks on several of the important participatory dimensions in the case study, it is important that the PRGA in general and that impact assessment research in particular keep up to date with and work on new methods of PR and GA that are rising in popularity with NARS.

At the Entebbe meeting, almost all the NARS representatives complained about the quality of participatory research. On-farm experimentation is one of the key areas that is most severely affected by low quality work. Yet, aside from this one case study, one workshop, and some recent work in the Plant Breeding working group, the admittedly difficult issue of improving the quality of on-farm experimentation particularly when such experimentation is viewed as participatory has not received much attention in the Program.

7.3 Emphasis on research-related benefits and on adoption

The PRGA model describes five types of benefits. The comparative study of the three projects concluded that participatory research in and of itself did not engender an increase in group action; therefore, benefits to social capital accumulation were negligible. Benefits to human capital in the form of improved ability to experiment and to better manage farms were reported to vary from project to project. The costs of participatory research were also detailed and compared to 'conventional' on-farm research where it was assumed that researchers merely contract land from farmers.

Although research on the impact of human capital effects, social capital benefits, and cost effectiveness is interesting, these aspects are not nearly as important as the effects of participatory research on the generation of technologies that result in farmer adoption and in the changing of research priorities about problems and opportunities. Did PR and GA result in technological change and, if it did, what were the consequences of such change on different groups in society and did PR and GA result in a change in research priorities? These are the two questions that should command the lion's share of attention in the impact assessment of participatory research, unless the goal is the permanent establishment of a group of farmer cooperators, such as a local farmers' research committee (CIAL), that have been extensively promoted by CIAT, the convening center, in Latin America.

In the context of the CGIAR, adoption should be the focus of impact assessment on PR and GA: adoption of PR-related technologies by farmers and PR-related information by researchers. Studies on the returns to agricultural research conclusively show that the size of net benefits from technological change is heavily influenced by the level of adoption. If adoption exceeds a negligible level, the size of benefits is almost never sensitive to research costs.

This focus reflects the spirit of the 1996 Systemwide Proposal that 'sold' the program on the value of 'upstream' or 'pre-adaptive' PR and GA. "Pre-adaptive participatory R&D brings users into the early stages of technology development as researchers and decision makers who help set priorities, define criteria for success, and determine when an innovation is 'ready' for release to farmers (:1)." In pre-adaptive participatory R&D, attention should center on the design and testing stages of technology development.

7.4 Emphasis on PPB

In a prospective next phase of the Program, impact assessment work needs to focus more heavily on the consequences of PPB. Thus far only one or two ex ante studies have been carried out on PPB. Impact assessment should continue to rigorously document some of the emerging success stories and also try to tease out lessons from an inventory of 'dry holes.' The 2003 state-of-art monograph on PPB needs to be updated in the next phase.

Conducting impact assessment on PPB is as close as it will get, in the foreseeable future, to quantitatively documenting the impact of the PRGA program. Although the PRGA is a relatively minor player in several important PPB projects, its history of research and advocacy in this area makes for a persuasive story for its inclusion among many partners in the attribution of success.

One of the thorny issues in impact assessment on PR and GA is the question of did PR and GA actually result in new or modified technologies or are the technologies that were tested and diffused only the researchers' unmodified technologies. This seemingly simple issue has not been definitively answered in some case studies that purport to show the effects of PR and GA. In PPB, as now practiced by leading practitioners, that issue is no longer an issue. The varieties would not have been forthcoming if farmers were not involved in their selection. Moreover, the impact assessment analyst in PPB does not have to spend a lot of intellectual energy in constructing a refined and textured counterfactual on what would have happened if PPB had not been implemented. As long as PPB focuses on regions with limited varietal change in the commodity of interest, the counterfactual that nothing would have happened is a good base from which to start the analysis. The analyst only needs to show that average varietal age in the

target farmer population is 'old', i.e., greater than 20-25 years for most important field crops, and document that the prospect for future varietal change is limited without PPB.

Impact assessment in PPB is a natural niche for PRGA support, because plant breeders usually do not have the means to carry out a rigorous assessment. The PRGA has developed excellent capacity in this area that can be marshaled cost-effectively to carry out interdisciplinary applications with interested plant breeders and to train both biological and social scientists in more specialized methods of impact assessment in PPB.

7.5 Addressing smaller questions and deeper thinking

Another line of inquiry to take on assessing impact of PR and GA is to focus on specific thematic issues of farmer involvement in the innovation process. For example, almost all IPM adaptive research and development projects teach farmers about the life cycle of the pest. By the end of the project, many reports show that farmers become significantly more knowledgeable about pest management. One of the critical questions for PR and GA is: Did this knowledge translate into technological adaptation and modification that spread to other farmers? In other agricultural fields, one can find comparable questions that could be used to guide a more incisive approach to impact assessment.

Many technologies are highly adapted and modified by farmers. The role of researchers is to get the adaptation process started by introducing principles or options to farmers. Soil conservation and minimum tillage practices are often used as examples of farmer-driven technology adaptation. In these areas of heavy farmer involvement, the appropriate types and duration of research depend on context but there are probably important lessons to be learned. A scientist in the Rural Innovation Institute at the Convening Center has carried out important conceptual work in this area based on a long-term experience in the adaptation of agricultural machinery. Collaboration between the PRGA and such scientists could result in a better definition of impact assessment pathways and provide a firmer conceptual basis for generating hypotheses on impact assessment.

7.6 Impact assessment of PR on plant breeding and natural resource management: The literature review

The 1996 Systemwide Proposal for the PRGA initiative referred to a 1995 review that concluded that the empirical evidence on the impact of participatory research was scanty (Okali, Sumberg, and Farrington 1994). The Science Council recommended that a study be linked to this review to determine whether the profile of impact assessment of participatory research had changed appreciably during the past ten years. Specifically, the terms of reference for the study were to review the literature on impact assessment of participatory research that has been produced by the Program and its partners and others, assess the extent to which impacts from using PR approaches have been rigorously evaluated by the PRGA Program and its partners, and specify methodological issues to be taken into consideration in assessing the impact of PR research.

The first stage of the review involved the assembly of impact assessment documents from the PRGA program, other sources in the CGIAR, and sources external to the CGIAR. The PRGA program supplied a listing of 124 references that were perceived to be of potential importance to the study. Of these, 104 documents were omitted because of problems related to availability and because they did not have substantive impact assessment information on participatory research.

Of the 20 remaining documents, only ten satisfied minimal levels of the criteria that the Science Council's Standing Panel on Impact Assessment (SPIA) have used to evaluate the quality of ex-post impact assessment in the CGIAR in its own assessment reports. The criteria used in the literature review included (1) the research is original and well described, (2) the counterfactual is realistic and well- stated, (3) attribution and assumptions are realistic and well-stated, and (4) distance down the impact pathway is as far as reasonable.

In a second round of elicitation, studies were canvassed from the other 14 CGIAR Centers. (Contributions from CIAT were included under the PRGA review). References to 110 documents were posted. Some of these were duplicates of studies already considered in the PRGA review because they were written in partnership with PRGA scientists. The screening of the other CGIAR center contributions was less selective than for the PRGA review, but only nine of the 110 studies were kept for detailed appraisal mainly because many Centers had taken a very liberal interpretation of what constituted empirical impact assessment on participatory research.

These 19 studies were complemented by studies that were external to the CGIAR. These were taken directly from literature searches and included only a handful of studies in addition to three that surveyed the effects of participation in fields outside of agricultural research in the broader developmental literature.

The PRGA impact assessment model described in Working Document 17 (Johnson et al. 2001b) was used as an organizing construct for the implementation of the review. Each of the selected studies was described and evaluated with regards to what it implied for the impact of participatory research. Methodological strengths and weaknesses of each study were noted.

The literature review concluded that the evidence for the impact of PR in PPB was more persuasive than the evidence for the impact of PR in PNRM. With regards to the work of the PRGA, the major contributions of the program have come in providing the conceptual basis for carrying out impact assessments, rather than in the actual implementation of impact assessment studies. The papers describing the types of participation (Lilja and Ashby, 1999) and impact hypotheses (Johnson et al. 2001b) gave great clarity to the issue of how to assess the impact of participation at all the different stages in research.

Additionally, the review underscored the importance of planning for impact assessment from the design stage of a research project. Several of the selected studies were constrained by a lack of baseline information. Others, particularly those in PNRM, were restricted by a lack sufficient technical expertise to address wider social and environmental benefits.

We broadly agree with the main finding of the review that the body of evidence pointing to the impact of participatory research is expanding slowly from a small base. The limited number of works selected for appraisal is perhaps the most surprising aspect of this study. It gives the impression that PR is not being used or that there is not that much activity in this research area. The latter seems to be true, but the review does not imply the former. Impact assessment research is usually results-oriented and not process-oriented. For example, farmer participation features prominently in several CGIAR-related success stories of technological change, but farmers' involvement is not well described or plays only a minor part of a narrative centering on the documentation of results.

Although the objective of this work was not to carry out a comprehensive search of all the literature on the impact of participatory research in agricultural research, PRGA-related research represents a significant share of the selected empirical studies. In the future, work in this field will attain a significantly higher profile if PPB fulfills its potential in the next 5-10 years.

8 IMPROVING INTERACTIONS

In the previous sections, based on an analysis of the strengths and weaknesses of the four substantive research and capacity-building areas that the Program has worked on since its implementation in 1997, the Review Panel suggested areas for improvement. In this subsection, we focus on interactions between the Program and its partners in the CGIAR, between the program and its Convening Center, between the PRGA Program and its Advisory Board, and between the Program and the outside world via its communications.

8.1 With the CGIAR Centers

The level of participation of the 14 CGIAR Centers (not including the Convening Center) in the PRGA is highly variable. Even among the three co-sponsors (CIMMYT, ICARDA and IRRI) the level of participation in the SWI is uneven, ranging from strong to weak. This is disappointing, given that one of the key objectives during Phase II was to institutional gender-sensitive participatory research into the national and international research systems (Saad 2003:39).

The PRGA has conducted surveys that tried to document the level of investment in participatory research areas in the CGIAR. The quality of these survey data has deteriorated over time. Nonetheless, these inventories show that areas where participatory research is used or is of potential use are economically important amounting to tens of millions of dollars equivalent to 10-20 percent of the total annual expenditure of the CGIAR. Across the CGIAR the incidence of variation is large as the relative size of the participatory research components range from 0 to about 40 percent of annual expenditure. Not surprisingly, anecdotal evidence on participation in the PRGA suggests that Centers with a higher expenditure on participatory research areas are more likely to be active in the PRGA than those Centers that invest relatively more in areas where participatory research and gender analysis are perceived to be of limited utility. Two of the most active centers in the Program are ICARDA and CIP, and they have invested heavily in the PRGA's thematic areas of interest.

It is clear that a systemwide program needs to have systemwide participation, but the expected level of that participation depends on multiple factors, especially on the level of shared circumstances across the CGIAR centers. For example, at one extreme, the systemwide program on genetic resources which is reputed to be very successful, is predisposed to attaining high levels of cooperation because scientists responsible for the conservation and utilization of genetic resources in the Centers confront the same issues in a shared work experience. The PRGA is not at the other end of the cooperation spectrum, but it is clearly in a different environment than the systemwide program on genetic resources.

The systemwide initiative on Collective Action of Property Rights (CAPRi) is composed mostly of social scientists, from a disciplinary perspective. CAPRi has successfully attracted cooperation through a larger, somewhat longer duration, and substantially more selective grant program than the one implemented in Phase I of the PRGA (CAPRi Review 2003). Without its commitment to and central focus on a grants program, incentives for cooperation with CAPRi would have been substantially diminished. In its interviews with PRGA staff and Advisory Board members, the Review Panel was told that the Program had not renewed their grants program because the best researchers receive most of the money, therefore creating inequity. This response conveys the impression that the PRGA is unwilling to accept a tradeoff between less equity and inclusiveness in exchange for greater participation among the CGIAR Centers in

the Program. We return to the issue of a grants program in the recommendation section of this report.

Concerns over a lack of wider CGIAR Center participation in the PRGA are founded on two short-term exigencies. In the near term, a contact or liaison scientist needs to be appointed in several of the Centers especially those where cooperation has been lacking. However, it is increasingly difficult to identify liaison scientists because with 17 systemwide and eco-regional programs and several Challenge Programs, the demand for cooperation easily exceeds the supply (and interest) of scientists especially in smaller centers. Moreover, unrestricted funding is increasingly scarce and scientists have to find resources to cover part or all of their own salaries. An observation that captured the attention of the participants at the Entebbe Meeting was one Center's response to the liaison question that stipulated a payment of US$ 20-30,000 annually to execute the appointment of an official contact person to the Program. Although this reply generated smiles at the Meeting, it reflects the reality of the current status quo that leads to non-cooperation.

Enhancing the overall awareness of what the CGIAR Centers are doing in participatory research and gender analysis is another urgent need. Lack of awareness reinforces the belief that not much is happening. PRGA staff would like to update their knowledge in this area, but have not found a cost-effective way to do so. (We expect that there is more going on than what is believed, as much of the work related to PR and GA is not well documented. For example, Thiele et al. (2001), in their study of the use of participatory research at CIP, found that a perception of inactivity in a Center was not borne out by reality once a thorough effort was made to document PRGA-related work).

To their credit, the scientists of the PRGA have tried to keep abreast of developments in the CGIAR. However, a comprehensive Program survey that attempted to document the state of play of participatory research and gender analysis in the centers did not result in a definitive picture of the level of activity and its dynamics over time (Becker 2005).

Perceived lack of cooperation is not an issue that will be solved quickly, but several small positive steps can be taken. First, success in program implementation should itself engender more cooperation. If participatory plant breeding fulfills its promise, the demand for cooperation should increase throughout the CGIAR. Secondly, the idea (expressed at the Meeting) for Center visits by the Coordinator and Board Chairperson could help substantially in identifying demands for cooperation. Thirdly, the idea to target staff involved in impact assessment as contact points is also a good one because increasingly social scientists in the Centers are engaged in impact assessment.

8.2 With the Convening Center

Interaction with the Convening Center (CIAT) is another area of concern. CIAT imparted stability to the Program in Phase I, but recent uncertainties and readjustments in response to financial stress have affected Program performance. The disposition of 'carry-over' and core funds by selected PRGA donors are two areas of creative tension in the financial management of the Program that seem to require greater transparency and communication. The Panel did not visit CIAT, and we did not interview the Center's research and financial management. Therefore, we do not know the details of this situation, but we flag this as an area of concern to which CIAT management could speak to when they respond formally to our report.

A more enduring concern is the apparent lack of interaction in interdisciplinary research between the PRGA scientists on the one hand and the scientists of the Convening Center on the other. As we discussed in the achievements section, longer term interaction among impact assessment economists has benefited both the PRGA and CIAT in maximizing the use of scarce resources. Other than the Phase I coordinator's participation in and support for the Phase II Program, we did not see other examples of sustained interaction in interdisciplinary research particularly among biological and physical scientists of the Convening Center and social scientists in the PRGA.

Over the life of the PRGA program, CIAT has had a dynamic mandate with the formal addition of the HarvestPlus Program, the Tropical Soil Biology and Fertility (TSBF), and the Rural Innovation Institute. The PRGA with an emphasis on PPB would seem to have a lot to offer for the HarvestPlus Program and vice versa. When the Review Panel enquired why more interdisciplinary research had not taken place between the PRGA scientists and biological scientists in the Convening Center, one response was that too much interdisciplinary research with CIAT's scientists would compromise the standing of the Program both within and outside the CGIAR. In that spirit, the preferred position (at the Entebbe Meeting) for the PRGA Program in CIAT's new organizational structure was in a location away from the two broad research programs but in close proximity to the Director General.

The Review Panel questions the wisdom of this view. A separate organizational scenario with independence may be appropriate for other systemwide and eco-regional programs, but it runs the risk of making the PRGA Program vulnerable in times of financial crisis. Without a scientific constituency in the Convening Center, broad-based support for the Program will not be forthcoming. Moreover, interdisciplinary research should be a key component of participatory research in the CGIAR. A greater experience in interdisciplinary research should translate into more productive participatory research and gender analysis. The low intensity of interdisciplinary research between the PRGA and CIAT scientists is partly attributable to the posting of some PRGA scientists distant from CIAT Headquarters and Regional locations in Phase II. Flexibility in posting may allow the Program to recruit more qualified scientific staff, but not being able to interact on a day-to-day and face-to-face basis diminishes the incentives for interdisciplinary research in the Convening Center.

A third concern pertains to the perceived under-utilization of the PRGA Advisory Board by the Convening Center. The AB fully realizes that it is an advisory board, but a more consultative interaction between CIAT (including both Center management and its Governing Board) and the PRGA AB would enhance the effectiveness of CIAT decision making on issues that concern PRGA. Consultation is not needed on micro-management, but on major items such as staffing decisions. The participation of a designated member of the Governing Board in the most recent PRGA Advisory Board's meeting is an important step towards greater consultation.

8.3 With the Advisory Board

As discussed in the Achievements section, the interactions between the Program's staff and its Advisory Board are mostly positive and intellectually stimulating. Nonetheless, the workings of the AB could be improved in two major areas. First, the AB has only recently initiated a rotation policy (2004) and the duration of terms is three years, renewable up to a maximum of six years. Some Board members have served since the inauguration of the Program and although they have made important contributions, it would be in the interest of the PRGA to ensure that new

AB members are introduced on a regular basis, thus bringing in fresh ideas and professional contacts. One way of doing this might be to disallow long-term members who are currently coming to the end of their first formal three-year term (in 2007), to serve a second three-year term. Secondly, the Program does not appear to involve AB members in resource mobilization. It could be argued that this was not necessary in the past as the PRGA has been adequately financed, but given the current precarious financial situation, it is clear that more attention must be given to resource mobilization. However, as pointed out by one AB member, most Board members are engaged in raising money for their own programs therefore they are unlikely to be willing or able to devote much time and attention to undertaking this activity on behalf of the PRGA. This issue should be taken into consideration when new Board members are selected.

8.4 With Donors

As noted, the PRGA came into being at least partly as a result of donor lobbying for a CGIAR systemwide response to growing interest in the use of participatory methods and gender analysis in agricultural research. Because of the congruence of the interests of the Program and those of many donors in the mid-1990s, the PRGA had relatively little problem in attracting external funding for its work. As seen in Table 2, it was particularly successful in finding support for its work on gender and natural resource management. Until 2002, all grant applications made by the PRGA were successful but since that time, three major applications (for a total of US$ 3,880,401) have been rejected. The Panel does not draw strong conclusions from this, but it is clear that the funding situation for PRGA is changing. This could be due to the fact that donor interests have moved away from participatory research and gender analysis, or it could be due to a perceived lack of impact of the program. Increasingly, donors are looking for concrete results and they are less likely to provide support for work that is vaguely defined or exploratory.

The Panel conducted telephone interviews with representatives of two donor agencies and received a generally positive perspective on PRGA. There was particular praise for the PRGA's work in participatory plant breeding. Nonetheless, a few issues were raised. These are listed here.

- Donors question the extent to which PRGA has been able to influence thinking in the CGIAR system, including the Science Council;
- The work of the Program has not been sufficiently consolidated into a visible body of outputs;
- In the gender area, the Program should be more closely linked with CGIAR G&D program.
- PRGA's good work is little known;
- The Program is slow to relate to new ideas and approaches and the overall mandate and approach has not changed significantly during its 10 year history.

8.5 With the outside world

The PRGA uses several ways to communicate to the public. The PRGA website (http://www.prgaprogram.org/modules.php?op=modload&name=DownloadsPlus&file=index&req=viewdownload&cid=39&orderby=titleD) is probably its most important source of public information. It gives brief information about some current activities, provides a link to many PRGA and other publications, and presents a good overview of work done during Phase I (1997-2002). The site is innovative and provides a number of tools for researchers and others with an interest in participatory research and gender analysis. The world clock and calendar are useful

tools. There is also a community workspace. However, the site is not completely up-to-date (for example it still lists staff members who left the Program more than a year ago), and it does not present a complete list of PRGA publications (See Table 4). For example the Program has published numerous reports and working papers on gender which do not appear on the website and are not reflected in the table. Moreover, the site does not provide a comprehensive overview of current activities.

Most of the research publications are lengthy and written in scientific language. This is appropriate for the scientists who comprise part of the intended audience, but it excludes many potential readers outside this small circle. For example, one Board Member said that although she found the studies interesting she did not have time to read them. Therefore, the Program may want to consider releasing shorter research briefs that would summarize some of the main findings of their more extensive work.

Several of the research publications, particularly the state-of-the-art reviews, are of a high quality, but a citation assessment using data from Thomson's Web of Science that tracks citations in about 8500 journals suggests that the impact of the PRGA program on the academic literature is modest. For the 122 publications in the current list, the average rate of citation is equivalent to about 1.0 mentions per scientific year invested in the program. None of the publications has been cited widely where 'widely' is conservatively defined as 10 or more citations. Citation analysis is characterized by many caveats and perhaps scientists in a systemwide, multidisciplinary program should be held to a different standard than those involved in more traditional CGIAR programs, but it is clear that a citation rate of 1.0 per scientific year is very low.

The problem of a very low citation rate is easily diagnosed but not easily rectified. First, it is important to note that citation rates in social sciences are significantly lower than in biological sciences. Citation rates for book chapters, conference proceedings, edited books, and grey literature also are significantly lower than for journal articles and books. The PRGA staff has focused more the former and less on the latter. Unless and until scientists employed by the PRGA target their work more towards journals, the citation rate for the Program as a whole is unlikely to improve. Again, as was the case of our critique of the perceived lack of interdisciplinary research with scientists in the Convening Center, we are not calling for a major shift of emphasis. We are only asking for the establishment of a minimal, mutually agreed upon standard.

9 RECOMMENDATIONS

In this concluding chapter, we list the recommendations that are derived from our discussion in Chapters 2-8. The recommendations, which after 1 and 2 are not listed in order of importance, are accompanied by a justification that sums up discussion in the previous chapters.

Recommendation 1. The PRGA's past performance and its present and future relevance to the Science Council's priorities for the CGIAR warrant its continuation.

The achievements that we described in Chapter 3 are impressive particularly in participatory plant breeding, gender mainstreaming in NARS, and impact assessment. The work in participatory plant breeding is of sufficient importance to the CGIAR and its partners that work in this area by itself warrants maintained funding to the PRGA for a prospective Phase III from 2008-2112.

Participatory plant breeding is heavily endowed with an international public goods character, and the CGIAR has been a major player in its creation and development. Participatory plant breeding, defined in its strongest sense where farmers are involved in the early stages of selection and where information from farmers figures prominently in the choice of parents for crossing, is a relatively new conceptual approach to plant breeding. A meeting funded by IDRC in 1995 was instrumental in catalyzing interest in this area and setting the stage for an operational program. This in turn was shaped by a plant breeding working group at a September 1996 meeting in CIAT which contributed to the original proposal for the establishment of the PRGA systemwide initiative in December 1996.

As discussed in Chapter 4, in a short time span of ten years, results in participatory plant breeding have substantially exceeded expectations. Three plant breeding programs have contributed to the development of PPB. They account for the majority of publications on participatory plant breeding in an expanding peer-reviewed literature and for the majority of emerging success stories in the field. Two of these plant breeding programs are located in the CGIAR, and the third is headed by a plant breeder with extensive working experience in two CG Centers. All three have had close interactions with the PRGA, and one is the coordinator of the plant breeding working group.

Recommendation 2. The PRGA should stay the course and maintain its investment in participatory plant breeding.

After ten years of increasing activity, the prospects are bright for participatory plant breeding to make a positive contribution to varietal change in marginal environments. The next five years are critical to the development of PPB and will define the size of that contribution.

In the next five years, prospective practitioners of PPB should have a better appreciation of what works when, where, and why as experience accumulates to allow researchers to approximate an ideal of efficient participatory plant breeding. The experience of sustained PPB in Sub-Saharan Africa (SSA) is slowly expanding from a very small base. More concerted efforts are needed to replicate and adapt global experience to SSA if the poverty-alleviation potential of PPB is to be attained. In both research and advocacy, the PRGA still has a large role to play.

Recommendation 3. The PRGA should strategically reconsider its role and program in Participatory Natural Resource Management.

Because of budgetary and staffing considerations, output in research and capacity building on participatory natural resource management has declined markedly in Phase II (2003-2007) compared to Phase I (1997-2002). For all intents and purposes, the Program is now inactive in this area. Options for redefinition of work in NRM are presented in Chapter 5. We discourage the existing arrangement that combines the NRM working group coordinator's position with leadership in gender analysis. Parallel with the coordination of the plant breeding working group, coordination in the NRM working group should be based on affiliation with an active NRM research presence in the CGIAR. Finally, inactivity in this mandated area would be regrettable, but preferable to trying to cover all the bases of the programmatic mandate with the existing staff and resources. Additional funding needs to be procured to mobilize a critical mass for focused work on participatory natural resource management.

Recommendation 4. The PRGA should accelerate its efforts to introduce gender analysis into the wider GCIAR system.

The Program has never had a fully dedicated gender specialist with a strong background in agricultural research. The Program should appoint such a person to lead its research work on gender analysis during Phase III. Substantively, the Program should reach out to established researchers in the CGIAR system by hosting a project development meeting that would focus on the design of several linked projects that would test and fine tune some of the gender methodologies and typologies that were developed by the Program in Phases I and II.

Work on gender mainstreaming should be continued but with an additional focus on gender mainstreaming within CGIAR institutions. To achieve this end, the Program should develop close, mutually-supportive links with the G&D Program.

The PRGA should also institute a gender audit for research proposals both at the stage of review and at the stage of impact assessment. As noted, some of the work that has been supported by the Program has not included even basic disaggregation of farmers by sex. Furthermore, the Program should also encourage both IARCS and NARES to hire more non-economist social scientists with a background in agriculture who are willing and able to work with biological scientists.

Recommendation 5. The PRGA should renew its search for the funding of a competitive grants' initiative to elicit greater cooperation from its partners particularly those in the CGIAR.

The level of participation across the CGIAR in the PRGA is highly variable. Even among the four co-sponsors the level of participation in the systemwide initiative is uneven ranging from weak to strong. The need for greater CGIAR participation in the Program is an area for improvement that is widely perceived by PRGA staff and Advisory Board Members. The perceived problem of participation relates to a lack of knowledge of what is going on in PR and GA in the rest of the CGIAR outside the centers that participate actively in the Program. This problem is addressed in Chapter 8 of the report. The PRGA can do several small things to enhance participation but, in the present budgetary setting of the CGIAR, participation is

unlikely to increase significantly unless more monetary support is provided for collaborative research. The Program operated what appeared to be a successful grants program in 1999-2001 when collaboration with CGIAR Centers peaked.

Recommendation 6. The Convening Center should take steps to promote greater interaction with the PRGA in the areas of financial management, the PRGA Advisory Board, and interdisciplinary research especially with biological scientists.

During Phase I of the Program, the panel received the impression that CIAT very actively supported the Program probably to the point of significant subsidization. In Phase II, the interactions do not appear to be as smooth and positive as in Phase I. Part of this perceived difference is attributed to fluctuations in the financial health of the Convening Center and to the fact that two core PRGA staff members, including the coordinator, are not posted at Headquarters. The PRGA has developed a strong Advisory Board that should be more involved in contributing information to and interacting with the Convening Center on important issues such as the writing of job descriptions and the selection of candidates for scientific staff positions in the PRGA to ensure programmatic continuity in accordance with stakeholder priorities. In general, the Advisory Board is an institutional resource that could be more effectively used by the Convening Center and vice-versa. Lastly, and perhaps most importantly, the level of interdisciplinary research between Convening Center biological and physical scientists on the one hand and PRGA staff on the other is significantly less than we expected. A minimal level of interdisciplinary research would help ensure a scientific constituency for the PRGA in the Convening Center and would also make for a stronger PRGA program.

Recommendation 7. The PRGA should continue to invest in impact assessment with greater emphasis on quantifying the benefits of PPB to different groups in society.

Impact assessment has been one of the strengths of the PRGA Program. Arguably, the PRGA has engaged in as much activity in this area as other systemwide or ecoregional programs. In the next five years, documentation of emerging success stories and also learning from 'dry holes' will be critical to the fulfilling of the promise of participatory plant breeding. The Program has already developed a good model for impact assessment and that model needs to be applied to varied PPB applications. The Program should make greater use of on-farm experimental data in impact assessment. The Program has carried out sufficient work on the costs of the participatory research and on the benefits of PR to human capital in experimentation and to social capital in engendering group action from PR. In the emerging success stories, work is needed not only to quantify the rate of return and the size of the benefits to investments in PPB, but also to describe the benefits of PPB-induced technological change to different groups in society from gender and poverty perspectives especially in heterogeneous marginal production environments.

Recommendation 8. We endorse recent PRGA efforts to publish more in peer-reviewed journals, to solicit more graduate student participation in the program, and to allocate more time to research.

We found in Chapter 8 that the volume of research-related writing was acceptable, but a citation analysis suggested that the impact on the academic community in the form of peer-reviewed literature was below a minimal standard.

Recommendation 9. We encourage the PRGA to publish good practice manuals for biological and social scientists in specialized areas of the programmatic expertise in PR and GA.

Many manuals on the conduct of participatory research exist, and PRGA-related research is found in several of these general treatments. But there are also several niche areas where the PRGA could make a contribution to enhancing this form of capacity building. For example, in participatory varietal selection an array of techniques can be employed, ranging from hedonic price indices to simple methods of yellow cards with smiling and frowning faces complemented by one-page questionnaires to evaluate perceptions of traits and preferences. All of these have strengths, weaknesses, and context. We were surprised at the lack of activity in this area when PRGA scientists and Advisory Board members frequently stated that quality was one of the biggest problems in applications of PR and GA.

Recommendation 10. Management of the Program should become less hands-on and more strategic.

The Review Panel noted that the Program Coordinator has a very busy travel schedule and seems to spend considerable time involved personally in the implementation of PRGA activities. Because of these demands he may have less time for other strategic management tasks, i.e., developing a long term vision for the Program, making the Program more visible within the CGIAR system, and consolidation of research results from the Program.

The Program Coordinator should focus on developing broad program goals, monitoring progress on a regular basis and invest time in giving the PRGA visibility in the CGIAR system both through publications and personal visits and scientific presentations. The Advisory Board should have regular turnover, and it should be actively involved with fund raising for the Program.

Recommendation 11. The Program should design an effective communications strategy, ensuring that key research findings are published in short policy briefs, written in easily accessible language and made widely available to the donor community, NGOs and others. Effort should also be made to update the website on a regular basis.

Several informants told the Review Panel that the PRGA publications were aimed primarily at scientists and were not easily digested by others with an interest in the subject matter. In an effort to give the Program greater visibility among existing and potential partners, it would be advantageous to publish a series of short one or two page research briefs. These could be sent to donors, NGOs and educational institutions.

The website is well-designed and offers several attractive features, but only a small number of the PRGA publications have been downloaded onto the site and several items on the site are out of date (e.g., the staff list). Since the website is by far the most important source of public information about PRGA, it is important that it be given regular attention.

Table 1. Workshops Organized by PRGA 1996 -2005

Location	Subject	Participants
Colombia, September 9–14, 1996.	First international seminar on participatory research and gender analysis for technology development: New frontiers in participatory research and gender analysis.	50
Ecuador, September 6–9, 1998	Second international seminar: Assessing the impact of participatory research and gender analysis.	100
Ecuador, August 31 - September 3, 1999.	Technical and institutional aspects of participatory plant breeding from the perspective of informal sector: An integrated analysis of themes, results and actual experiences.	75
England, September 1–3, 1999	Participatory research for natural-resource management: Continuing to learn together.	28
Nepal, May 1–5, 2000.	International symposium: An exchange of experiences from South and Southeast Asia.	100
Kenya, November 6–11, 2000.	Third International Seminar: Uniting science and participation in research.	200
Côte d'Ivoire, May 7-10, 2001.	Africa-wide symposium on Participatory plant breeding and participatory plant genetic resource enhancement.	69
Zimbabwe, October 15–20, 2001.	Workshop on exploring linkages between participatory research and computer-based simulation modeling to increase crop productivity at the smallholder level.	50
Colombia, October 29 to November 1, 2001.	Workshop on farmer breeding skill enhancement. Complementing farmers' genetic knowledge.	13
Colombia 13-17 November 2001	Workshop on benefits of rural women's participation in Natural Resource Management.	18
Germany, April 22–23, 2002.	Stakeholder meeting 2002: Participatory monitoring and evaluation.	30
Italy, September 30 - October 4, 2002	Workshop on the quality of science in participatory plant breeding.	34
Colombia, June 30 to July 1, 2003	Stakeholder Meeting: From Assessment to Learning and Change.	40
Mexico, October 19-21, 2005	Impact Assessment Workshop.	30

Table 2: PRGA Program Submitted Proposals: 1997-2006

	Year	Program and Proposal Title	Donor	Amount US$
CROSS CUTTING THEMES				
1	1997	Systemwide Initiative on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation	TAC	990,000
2	1998-2000	Systemwide Initiative on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation	New Zealand Ministry of Foreign Affairs	450,000
3	2006-2010	National Agricultural Innovation Systems that Work for the Poor. Building on the Bolivian Experience.	DFID	1,536,794 (€1,185,648)
TOTAL (US$)				**2,976,794**
GENDER				
4	1997-2000	Improving Technology Development through Gender Analysis (Global I)	IDRC	190,000
5	1998	Developing a framework for concurrent assessment of the differential impact of new technologies on men and women smallholders.	ACIAR	149,995
6	2001-2003	Improving Technology Development through Gender Analysis (Global II).	IDRC	191,917
7	2003-2005	Building Capacity in Social/Gender Analysis in the Eastern Himalayas.	IDRC	177,170
8	2003-2005	Building Capacity for Gender Analysis and Gender Mainstreaming in the Eastern, Southern and Central African Region	CIDA	992,000
9	2005-2008	Institutionalizing Social Analysis and Gender Analysis for poverty alleviation in Agricultural research and development in the Eastern Himalayas	IDRC	162,400
TOTAL (US$)				**1,863,482**
PARTICIPATORY PLANT BREEDING				
10	1999	Participatory Plant Breeding and Property Rights	IDRC	45,700
11	2001	Participatory plant breeding and participatory plant genetic resource enhancement an Africa-wide exchange of experiences	Rockefeller Foundation	60,000
12	2001	Moving towards the institutionalization of Participatory Plant Breeding in mainstreaming research (with a focus on the CGIAR)	IDRC	75,000
TOTAL (US$)				**180,700**
NATURAL RESOURCE MANAGEMENT				
13	1998-2001	Assessing the benefits of rural women participation in natural resource management research and capacity building.	BMZ	1,313,000
14	1999-2001	Institutionalizing the Use of Participatory Approaches and Gender Analysis in Research on Natural Resource	Ford Foundation	1,199,000

		Management to Improve Rural Livelihoods		
15	2000	Integrated Nutrient management for building the assets of poor rural women	Ford Foundation	400,000
16	2001	Linking Logics II: A joint venture between PRGA, ICRISAT and CIMMYT to further explore linkages between Farmer Participatory Research Approaches and Computer Based Simulation Modeling to increase crop productivity at the smallholder level	Ford Foundation	66,650
17	2001	International Workshop on Integrated management for Sustainable Agriculture, Forestry and Fisheries.	IDRC	30,864
18	2001	International Workshop on Integrated management for Sustainable Agriculture, Forestry and Fisheries.	Italian Ministry of Agriculture	10,000
19	2004	Improving Water Productivity of Cereals and Food Legumes in the Atbara River Basin of Eritrea	CGIAR Water and Food Challenge Program	150,000
TOTAL (US$)				**3,169,514**
IMPACT ASSESSMENT				
20	2002	Social Research Conference	GTZ	8,650
21	2002	Social Research Conference	Rockefeller Foundation	15,000
22	2003	Impact of Participatory Natural Resource Management Research in Cassava-Based Cropping Systems in Vietnam and Thailand	SPIA	30,000
23	2002	Social Research Conference	DFID	9,500
24	2005	Analysis of Participatory Research Projects in the International Maize and Wheat Improvement Center (CIMMYT)	USAID	30,000
TOTAL (US$)				**93,150**
REJECTED PROPOSALS				
25	2002-2005	Learning and Change-Oriented Impact Assessment	GTZ	1,705,505 (€1,316,000)
26	2003-2005	Ensuring benefits for those who need them most: Building strong institutions for managing inclusive multi-stakeholder processes for watershed development	CGIAR Water and Food Challenge Program	900,000
27	n.d.	Strengthening Rural Innovation Ecologies: Research on how Social Networks Influence Agricultural Innovation	BMZ	1,274,896 (€983,500)

Table 3. Some important examples of application of PPB

Crop	Country	Intervention
CGIAR INSTITUTE – LED PROGRAM		
Rice		
West Africa (16 NARS)		PVS
Barley	Algeria	PPB
	Egypt	PPB
	Eritrea	PPB
	Iran	PPB
	Jordan	PPB
	Morocco	PPB
	Syria	PPB
	Tunisia	PPB
	Yemen	PPB
Beans	Congo	PVS
	Colombia	PPB
	Eritrea	PVS
	Ethiopia	PVS
	Kenya	PVS
	Malawi	PVS
	Rwanda	PVS
	Tanzania	PVS
Cassava	Brazil	PPB
Chickpea	Eritrea	PPB
	Jordan	PPB
	Syria	PPB
Lentil	Eritrea	PPB
	Syria	PPB
	Yemen	PPB
Maize	Mexico	*
Pearlmillet	Nepal	PPB
	India	PVS
	Namibia	PVS
Potato	Bolivia	PPB
	Ecuador	PVS
	Peru	PVS
Rice (Rainfed)	India	PPB/PVS
	Nepal	PPB/PVS
	Sierra Leone	PVS
Sorghum	Mali	PPB
Bread wheat	Bangladesh	PPB/PVS
	Eritrea	PPB
	India	PPB
Bread wheat (cont.)		
	Iran	PPB
	Jordan	PPB
	Nepal	PPB/PVS
	Syria	PPB
Durum wheat	Algeria	PPB
	Jordan	PPB
	Syria	PPB
NARS/Others-led programs**		
Bean	Ethiopia	PVS
	Malawi	PVS
	Tanzania	PVS
Cassava	Brazil	PPB
Chickpea	India	PVS
Cotton	Mali	PPB
Cowpea	Ghana	PVS
Maize	Brazil	PPB
	India	PPB/PVS
	Kenya	PVS
Mungbean	Nepal	PVS
Rice (Irrigated)	India	PVS
	Nepal	PPB/PVS
Rice (Rainfed)	Bangladesh	PVS
	Benin	PVS
	Ghana	PVS
	India	PPB/PVS
	Nepal	PPB/PVS
Sweet Potato	Ghana	PVS
	Kenya	PVS
Sorghum	India	PVS
	Malawi	PVS
	Ethiopia	PVS
Bread wheat	India	PVS
	Nepal	PVS

* Participatory landrace selection for on-farm conservation

** These include programs led CAZS-NR at the University of Wales, Bangor, UK and other non-CG institutes

Table 4. Summary of PRGA Publications Listed on the Program website (February 2007)

	General	PPB	NRM	Gender and Stakeholder Analysis	Impact Assessment
Proceedings	1	28	5		1
Reports	12	2	11	2	1
Stakeholder Consultations	13				
Working Documents	5	7	4	3	12
Books		1	3		1
Monographs		4			1
Presentations		10			9
Small Grant Reports		19			2
Book Chapters					3

ACKNOWLEDGEMENTS

This review of the systemwide program on Participatory Research and Gender Analysis formally started with the panel's coming together at an Advisory Board meeting in mid-October in Entebbe, Uganda. We thank members of the Board and the PRGA scientists who gave unstintingly of their time to respond to our every query. We were especially grateful to be able to talk to Janice Jiggins, Jacqueline Ashby, Gordon Prain, and Barun Gurung. Janice, who is the Chair of the Advisory Board, shared her thoughts on the working style, scientific commitment, and future scenarios of the PRGA. Jackie played an important role in bringing the PRGA into existence and somehow found time to be the Phase I coordinator. She provided a keen institutional memory on the genesis and 'early days' of the PRGA together with ideas on what would work and what wouldn't. Gordon was the Chair of the Internally Commissioned External Review of the PRGA in 2000 and is presently a CGIAR Center presence on the Advisory Board. Barun is the Phase II coordinator and brought us up to date on his thinking on present and future research and advocacy in the PRGA. Barun also accompanied us on our field visits to Kenya and Uganda. We are grateful to the NARS scientists from ASARECA who made presentations and interacted with us on their work on gender mainstreaming.

During the Entebbe meeting, we spent a lot of time talking with Salvatore Ceccarelli who patiently explained in exacting detail the nuances of participatory plant breeding. After many hours, we thought that we had exhausted the topic, but Salvatore informed us that he was disappointed that we did not ask one last question: "What would I do in participatory plant breeding if a donor gave me US$ 100,000?"

We also thank Elizabeth Sengdewala of ASARECA who also accompanied us on the field visits, Jane Ngugi who hosted our visit at KARI in Kenya, and Leonidas Dusengemundu who arranged our visit at ISAR in Rwanda. We thank all the scientists at KARI and ISAR for taking the time to interact with us. We hope that the farmers we visited find climbing beans and orange-fleshed sweetpotatoes as interesting and as relevant to their lives as the scientists with whom they were working felt they would be.

The visit to East Africa was complemented by discussions with key people who could provide insight on the panel's terms of reference in its review of the PRGA. We thank them for sharing their perceptions and ideas with us.

Claudia Ximena Garcia responded in a timely manner to all of our requests for data and information on the PRGA. Nina Lilja, the impact economist in the PRGA, helped coordinate those requests. Thank you Claudia and Nina for being so responsible and so organized!

Lastly, we are grateful for Sirkka Immonen from the Science Council for coordinating and providing guidance on this review. Sirkka also shaped the desk study on impact assessment of participatory research that was carried out by James Stevenson. We thank James for the skillful execution of that challenging task, and for allowing to include it in this report.

Annex 1
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Experience: Present position since 2002. Head of the Social Sciences Department, CIP (1991-2002); Institutionally responsible for leading research on impact assessment; Responsible for interdisciplinary research, largely among plant breeders and social scientists; Visiting Scientist on Study Leave at the International Food Policy Research Institute (1998-99); Principal economist, ICRISAT, (1985-91); Visiting fellow on sabbatical at the Economics Department, Research School for Pacific Studies (RSPS), Australia National University (1985); Visiting fellow on sabbatical at the Department of Agricultural Economics, Cornell University (1984-85); Principal economist, ICRISAT and the Agricultural Development Council Associate for India (1980-84), involved in Village Level Studies and in strengthening social science research capacity; Agricultural economist and advisor (as visiting Assistant Professor to Food and Research Economics Department, University of Florida) to the Agricultural Economics Department at the National Agricultural Research Program in El Salvador (1977-79). Agricultural economist on a USAID Contract in Washington, D.C. (1972-73); Agricultural economist, Peace Corps, in INCORA, Colombia (1970-72). Reviewer of USAID's Soil Management CRSP (since 1997); Author of over 100 publications on small-holder systems, NRM economics, economics of different cropping systems; adoption, and also farmer participation and perceptions. About 300 citations in the ISI Web of Science.

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Expertise: Comparative education, project management, interdisciplinary teams, information technology, science and technology policy
Education: Ph.D (Comparative Education), State University of New York at Buffalo (1982); M.A. (Comparative Education), McGill University (1978); B.A. University of British Columbia (1970)
Experience: Current position since 2002; 2001: Fellow, Founders' College, and Visiting Professor, Division of Social Sciences, York University, Toronto; 2001: Senior Research Advisor, Evaluation, IDRC, 1992 – 2001: Regional Director, Eastern and Southern Africa, International Development Research Center, Nairobi (1997-2001: Executive Director, Essential Health Interventions Project leading the CAD$20 million health research and intervention project based in Tanzania; 1995-97: Coordinating Regional Director for Africa and the Middle East); Led interdisciplinary team of R&D specialists in economics, agronomy, ICT, natural

sciences and social policy; organized IDRC input into the 1994 Desertification Convention; and a series of Pan-African initiatives in environment, social reconstruction, water management; 1987–92: Coordinator, Gender and Development Unit, IDRC. Duties included a research network on women and environment across anglophone and francophone African countries; and research projects on women and agricultural production, education, technology, and social participation in Africa, Asia, Latin America, the Caribbean, and Canada (1990-91 on sabbatical leave: Visiting Senior Research Fellow, Department of Research and Specialist Services, Ministry of Lands, Agriculture and Rural Resettlement, Harare, Zimbabwe); 1982–87: Program Officer/Senior PO, Science, Technology and Energy Policy, Social Sciences Division, IDRC. Duties related to the East and West African Technology Policy Studies Networks for 25 African countries; 1981–82: Research Fellow, Center for Developing Area Studies, McGill University, Montreal; Previous work expertise related to publishing and editing. Awards include the Distinguished Alumni Award, Faculty of Educational Studies, State University of New York at Buffalo (1992). Consultancies to FAO, UNIFEM, CGIAR, IDRC and WHO. Relevant memberships: World Bank Advisory Group on Social Development; ILO Expert Group on Information Technology and Youth Employment; Task Force on Gender and Tropical Diseases, Special Program for Research and Training in Tropical Diseases, WHO (1994-97); U.N. Expert Group on Gender, Science and Technology; Board of Directors, EarthCare Africa (1993-97); Member, Review Panel for Extension of International Staff Contracts, ICRAF (2000). Reviewer of Water and Food CP research proposals. Author in over 90 publications on gender, health and information, including 5 books, 18 book chapters and 16 refereed articles. Languages: English, German, French.

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Punjab Agricultural University, DIRR
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India
Tel: 91 161 2401221
E-mail: drpau@pau.edu
Position: Director of Research, Punjab Agricultural University
Expertise: Plant breeding, genetics and plant genetic resources
Education: Post-Doctoral Fellowships: German Academic Exchange Service (DAAD) Fellowship, Germany 1976-1978; Alexander von Humboldt (AvH) Fellowship, Germany, 1988-89; AvH Europe Fellowship, UK, 1989; Univ. of Hohenheim Fellowship, Germany, 1990; Degrees: Indian Agricultural Research Institute, New Delhi (1974); Punjab Agricultural University, Ludhiana (1969)
Expertise: Current post since July 2005; Director, NBPGR, New Delhi, 2000-2005; Asst. Director General, ICAR, New Delhi, 1998-2000; Scientist, CIMMYT, Mexico, 1993-94; PAU, Ludhiana: Assoc Director (Seeds), 1995-98; Sr. Maize Breeder, 1988-95; Maize Breeder, 1979-87; Asstt. Maize Breeder, 1974-79; Awarded: IARI-ICAR Gold Medal, 1974; ICAR Rafi Ahmed Kidwai Memorial Prize, 1986-87; Punjab State Council for Science and Technology Appreciation Certificate, 1990-93; Indian Society of Genetics and Plant Breeding Joginder Singh Memorial Prize, 1997-98. Fellow: Indian National Science Academy; National Academy of Science since 1999; in Executive Council 2003-2005; Punjab Academy of Sciences.

Annex 2
TERMS OF REFERENCE
EXTERNAL REVIEW OF THE SYSTEMWIDE PROGRAM on PARTICIPATORY RESEARCH and GENDER ANALYSIS (PRGA)

1. The specific Terms of Reference for the review of the PRGA Program are:

- Assess the clarity, relevance and appropriateness of the mission and goals of the PRGA Program regarding the CGIAR's goals and mandate.
- Assess the mechanisms in place for setting the priorities for reaching PRGA Program's goals, the relevance of the priority themes and the strategies to reach the overall goals of the CGIAR and its partners.
- Assess the efficiency and effectiveness of the PRGA Program in implementing its research and research related agenda, specifically, with respect to:
    - increasing awareness and consideration of participatory research and gender analysis methods in the relevant areas of research;
    - developing specific participatory research methodologies for broad application;
    - developing guidelines for gender analysis for broad application;
    - enhancing research organizations' ability to choose from a tool-kit of participatory plant breeding and varietal selection methods and approaches;
    - identifying policy instruments that enhance involvement of users as partners in PRGA in all stages of applied and adaptive research.
- Assess the balance between research and advocacy activities in the Program's agenda.
- Assess the extent to which the Program has contributed to mainstreaming participatory research on one hand and gender analysis on the other hand in the CGIAR and among its partner institutions and the reasons for success or lack of it (focusing on the relevant areas of research included in the PRGA agenda).
- Assess the derived demand for the approaches based on the change in investment and effort in PR and GA research over the life of the Program at the Centers.
- Evaluate the relevance, quality and achievements of PRGA research and related activities in the following areas:
    - methodologies and conceptual frameworks;
    - publications and other dissemination pathways;
    - capacity strengthening; and
    - institutional learning.

This evaluation should be based on clear criteria for each as developed by the study Panel, and should also examine the processes in place for monitoring milestones and enhancing the quality of outputs and outcomes.

- Assess the methodologies and frameworks for impact assessment in PRGA for both PR and GA. The evaluation should also examine the processes in place for monitoring and enhancing the impacts. The study should employ innovative indicators of impact (direct and indirect) suitable to the full range of impact pathways.
- Assess the effectiveness and the efficiency of the PRGA Program's governance, decision-making, organization, accountability, resource mobilization and allocation, and mode of operation, including internal communication between participating institutions, identification of constraints in implementing the Program and lessons learnt by both the CGIAR and its partner institutions.
- Evaluate the effectiveness of CIAT's convening role, including the relation between the Program and CIAT's own research agenda, taking into account the synergies generated and the transaction costs incurred.

- Assess the need and continuing relevance of the PRGA Program and, depending on the assessment, make recommendations as to its future objectives and role, its organization, and funding; or alternatively an exit/devolution strategy.

2. The task for the IA study by the Panel includes:

- Review the literature on IA of PR that has been produced by the Program and its partners and others.
- Assess the extent to which impacts from using PR approaches have been rigorously evaluated by the PRGA Program and its partners. On the basis of documented evidence of impact, the Panel should draw conclusions to the extent possible on the effectiveness of the various PR approaches used to date. It should also include a survey of the relevant CGIAR Centers and PRGA Program partners of their assessment of the effectiveness of PR approaches.
- Specify methodological issues to be taken into consideration in assessing the impact of PR research.

Annex 3
PERSONS INTERVIEWED BY THE PANEL

Advisory Board Members and PRGA Staff

Ashby, Jacqueline.	RII Director, CIAT
Aw-Hassan, Aden.	Dry Land Resources Coordinator, ICARDA
Biggs, Stephen	University of East Anglia, Norwich, U.K.
Ceccarelli, Salvatore	PRGA Program Mainstreaming Advisor, ICARDA
Gurung, Barun	PRGA Coordinator
Jiggins, Janice	University of Wageningen, the Netherlands
Kapiri, Monica	Kampala, Uganda
Lilja, Nina	PRGA Program
Lubbock, Annina	IFAD, Rome
Prain, Gordan	CIP, Lima, Peru

Researchers, Partners

Chiche, Yeshe	EIAR, Ethiopia
Dusengemundu, Leonidas	ISAR, Rwanda
Ngugi, Jane	KARI, Kenya
Kabanyoro, Ruth	NARO, Uganda
Mergabe, J.	Director, ISAR, Rwanda
Mirkisna, E	Director-General, KARI, Kenya
Mukakamanzi, Domitille	Farmer, Rwanda
Mureithi, Joseph	Deputy-Director, KARI, Kenya
Mvurnabandi, John	Farmer, Rwanda
Nyongesa, Dave	KARI, Kenya
Nkurikiyumwami, Charles	Director, HRD, ISAR, Rwanda
Sengdewala,, Elizabeth	Facilitator, ECAPAPA/ASARECA
Turyamureeba, Gard	NARO, Uganda

Telephone and/or E-mail Interviews

Feldstein, Hilary	Gender Consultant, U.S.A.
Germaine, Anne	Senior Policy Analyst, CIDA
Haines, Charles	Senior Policy Analyst, CIDA
MacGillivray, Iian	Principal Advisor, Agriculture, CIDA
Paris, Thelma	Gender Specialist, IRRI
Vernooy, Ronnie	Senior Program Specialist, IDRC
Vicki Wilde	Gender and Diversity Program, ICRAF

Annex 4
PROCEEDINGS, MONOGRAPHS, AND OTHER PUBLICATIONS

Proceedings

Ceccarelli, S; Grando, S. 2005. Workshop on "Recognition, Access and Benefit Sharing in Participatory Plant Breeding", August 2005, Amman, Jordan.

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analysis of issues, results and current experience. Working Document No. 3. PRGA Program, Cali, Colombia. 118p.

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Machado, AT; Fernandes, MS. 2001. Participatory maize breeding for low nitrogen tolerance. *Euphytica* 122:567-573.

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Smale, M; Bellon, MR; Manuel Rosas, I; Mendoza, J; Solano, AM; Martinez, R; Ramirez, A; Berthaud, J. 2003. The economic costs and benefits of a participatory project to conserve maize landraces on farms in Oaxaca, Mexico. *Agricultural Economics* 29:265-275.

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Witcombe, JR; Joshi, A; Joshi, KD; Sthapit, BR. 1996. Farmer participatory crop improvement. I. Varietal selection and breeding methods and their impact on biodiversity. *Experimental Agriculture* 32:445-460.

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Annex 5
22 HYPOTHESES REGARDING THE INCREMENTAL IMPACT OF PARTICIPATORY ELEMENTS IN A RESEARCH PROJECT[2]

Technology impacts
Design stage:
(H1) The proportion of the targeted beneficiary group that could potentially be reached by the project increases because the priority topic chosen for research is more relevant to the needs and priorities of targeted farmers.
Testing stage:
(H2) The number of potential adopters within the target group increases because the specific technology1 selected for recommendation is more appropriate given farmers' criteria and constraints.
Diffusion stage:
(H3) The probability increases that potential adopters for whom the technology is appropriate will be aware of it, and that adopters will be willing and able to adopt and recommend it to others.

Social and human capital impacts (among beneficiaries)
Design stage:
(H4) Collaborative: Farmers/communities improve their ability to interact with outsiders, to articulate and evaluate their opinions and priorities, and to negotiate joint solutions with other stakeholders who may have different opinions.
(H5) Collegial: Farmers/communities improve their ability to interact with outsiders, particularly their ability to attract the interest and support of researchers for farmers' problems and priorities.
Testing stage:
(H6) Collaborative: Farmers/communities enhance their own testing and evaluation skills with an increased knowledge of scientific methods of experimentation and evaluation, and improve their ability to negotiate joint recommendations with other stakeholders who may have different opinions.
(H7) Collegial: Farmers/communities enhance their own testing and evaluation skills with an increased knowledge of scientific methods of experimentation and evaluation, and improve their ability to convince researchers of the validity and relevance of farmers' results.
Diffusion stage:
(H8) Collaborative/collegial: Farmers/communities learn what is involved in mass diffusion of technology, particularly the complexity of adoption decisions and the importance of complementary inputs such as seed, credit, or information.

A final hypothesis relates to the fact that, in many cases, participatory projects involve farmers working together with other farmers as well as with researchers.
(H9) The increased communication among farmers may result in better information and in information sharing among farmers and within the broader community, strengthening community social capital.

Feedback to formal research impacts
Design stage:
(H10) Consultative: Researchers learn about farmers' priorities and solutions.

[2] Source: Johnson et al. (2001b)

(H11) Collaborative: Researchers understand farmer priorities and solutions— including any new shared priorities or solutions that farmers and researchers identify as a result of working together—and incorporate them into their work.
(H12) Collegial: Researchers learn about farmers' priority problems and solutions by observing their decisions about problems, solutions, and innovations.
Testing stage:
(H13) Consultative: Researchers learn farmer criteria for evaluating technologies.
(H14) Collaborative: Researchers understand farmer criteria and methods for testing and evaluation of technology—including any new shared criteria or methods that farmers and researchers identify as a result of working together.
(H15) Collegial: Researchers learn about farmers' testing and evaluation methods and criteria by observing their actions.
Diffusion stage:
(H16) Consultative: Researchers learn about the factors that affect farmers' adoption decisions and what these imply for the diffusion process.
(H17) Collaborative: Researchers learn about farmer-to-farmer diffusion practices and about what kinds of information and skills both farmers and extension workers need to support this spontaneous diffusion.
(H18) Collegial: Researchers may learn about spontaneous farmer-to-farmer diffusion through observation of farmer activities.

Finally, a general hypothesis that would apply at all stages is that:
(H19) Researchers begin to understand that working with farmers may require new types of skills such as facilitation and conflict resolution that were not as important when research was carried out entirely on-station**.**
This would be expected to increase as participation moves from functional to empowering.

Cost of research impacts
(H20) Moving from conventional to consultative or collaborative forms of participation generally increases formal research organizations' costs at the particular stage where it is incorporated; however, it may reduce cost at subsequent stages.
(H21) Collegial research reduces research costs to formal research organizations at the stage where it is implemented because costs are transferred to farmers.
(H22) Participation without compensation increases farmers' costs unless it relies exclusively on those farmers (often a small and unrepresentative group) who already experiment on their own with new technologies and practice.

Annex 6
RELEVANT QUESTIONS ABOUT ASSESSING THE IMPACT OF USER PARTICIPATION IN NATURAL RESOURCE MANAGEMENT RESEARCH[3]

Did participation and gender differentiation change product objectives or priorities with respect to technology development and transfer for NRM?

What difference did participation make to the cost or impact of the research?

Did participation and gender differentiation or new organizational strategies affect the number of beneficiaries, the type of beneficiaries adopting new technology, or the speed at which they adopted?

Was local experimentation with new practices strengthened?

Did capacity building improve local skills, problem-solving ability, and ability to initiate and sustain participation without external facilitators?

Was there feedback to NARS or IARC research that changed their research priorities or practices beyond the scope of the specific project?

[3] Source: Johnson et al. (2001b)

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(Weltzien et al, 2003 has an inventory of 40 PPB cases in the formal sector institutions in the developing countries.)

Annex 8
ACRONYMS

AB	Advisory Board of the PRGA
ACIAR	Australian Center for Agricultural Research
ACORDE	Asociación Costarricense para Organizaciones de Desarrollo
AROs	Advanced Research Organizations
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
BMZ	German Federal Ministry for Economic Cooperation and Development
CAPRi	Collective Action for Property Rights
CAZS-NR	Center for Arid Zone Studies – Natural Resources
CBD	Convention on Biodiversity
CGIAR	Consultative Group for International Agricultural Research
CIAL	Comité de Investigacíon Agricola Local
CIAT	International Center for Tropical Agriculture
CIDA	Canadian International Development Agency
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
CIP	International Potato Center
DFID	Deparment for International Development, U.K.
GA	Gender Analysis
GTZ	German Agency for Technical Cooperation
G&D	Gender and Diversity Program of the CGIAR System
IARCs	International Agricultural Research Centers
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRAF	International Center for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDRC	International Development Research Center
IPM	Integrated pest management
IPR	Intellectual Property Rights
IRRI	International Rice Research Institute
ISAR	Institut des Sciences Agronomiques du Rwanda
ISNAR	Institute for Service to National Agricultural Research
KARI	Kenya Agricultural Research Institute
NARS	National Agricultural Research Systems
NERICA	New Rice in Africa
NGOs	Non-governmental organizations
NRM	Natural Resource Management
PPB	Participatory plant breeding
PNRM	Participatory Natural Resource Management
PRGA	Participatory Research and Gender Analysis
PVS	Participatory Varietal Selection
SSA	Sub-Saharan Africa
SPIA	Standing Panel on Impact Assessment (Science Council)
Stripe	Inter-center thematic reviews commissioned by the SC to evaluate specific priority themes which cut across more than one center
SWI	Systemwide Initiative
TAC	Technical Advisory Committee
TSBF	Tropical Soil Biology and Fertility
UN	United Nations
USAID	United States Agency for International Development
WARDA	West African Rice Development Association
WN	World Neighbors
WTO/TRIPS	World Trade Organization/ Trade-Related Aspects of Intellectual Property Rights

CGIAR

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