SCIENCE COUNCIL
CGIAR

Report of the Sixth External Program and Management Review (EPMR) of the International Potato Center (CIP)

January 2008

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

SCIENCE COUNCIL

CGIAR

Report of the Sixth External Program and Management Review (EPMR) of the International Potato Center (CIP)

Review Panel: Edgardo Moscardi (Chair)
Malachy Akoroda
Jay Gopal
Donald McKerron
Julie Noolan
Carlos Pomareda
Alejandro Avedissian
(Consultant)

JANUARY 2008

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

Correct citation: CGIAR Science Council (2008) *Report of the 6th External Program and Management Review of the International Potato Center (CIP).* Rome, Italy: Science Council Secretariat

THIS DOCUMENT CONTAINS:

- Extracts from the Summary Record of Proceedings of the Annual General Meeting 2007 (AGM07)
- Science Council Commentary
- CIP Response to the Sixth EPMR
- Transmittal letter and Report of the Panel on the Sixth CIP EPMR

Consultative Group on International Agricultural Research (CGIAR)

CGIAR Annual General Meeting, 2007 (AGM07)[1]

Agenda Item 11. Evaluation

...

11.c CIP EPMR

***Conclusion and Decisions**:*

- The CGIAR endorsed the ExCo recommendations on the 6th CIP EPMR.
- The SC review on SWEPs was welcomed as a basis for a more in depth discussion on partnerships.

[1] Extract from the Summary record of Proceedings of Annual General Meeting, 6-7 December 2007

Science Council Commentary on the Sixth External Program and Management Review (EPMR) of the International Potato Centre (CIP)

September 2007

The Report of the 6th EPMR of CIP was discussed at the Eighth Meeting of the Science Council, at FAO HQ in Rome Italy. Panel Chair Edgardo Moscardi presented the main findings and recommendations of the Report, on behalf of the Review team. CIP Board Chair Jim Godfrey and CIP Director General Pamela Anderson responded on behalf of the Centre. The SC thanks the Panel for its comprehensive, frank and analytical assessment of the Centers research, management and governance. The review's report is well written, and the conclusions clearly documented, with a good strategic assessment.

The Panel finds CIP a Centre much improved since the last EPMR, committed to adapt itself to changes in its external environment. Based on recommendations from the 5th (2002) EPMR, CIP has undertaken a visioning exercise, drafted a Strategic Plan, and revised its research structure as a result. The Panel feels that although these efforts are commendable, CIP's increased reliance on restricted funding has drifted the Centre away from its core areas of research on potato and sweet potato, and has weakened its regional work, essential to ensure that the output-outcome interface is realized. The reality of restricted funding for the System, and the potential for poor management of such funds (as seen in some other Centers) calls for CIP to have a clearer and more "robust" set of research priorities, along with a business plan to maintain a clear focus on the core business of CIP.

The SC agrees with the Panel that the high positive correlation between potato/sweet potato production areas and poverty assures that, by concentrating its research work on these two commodities, CIP can achieve significant economic, employment, health and other beneficial impacts on the poor. The SC therefore views the Panel's 18 recommendations and 25 suggestions as intended to help CIP move forward in this direction. The SC is pleased to see that the Centre has responded positively to the review's major findings and the majority of its recommendations. CIP had originally accepted thirteen of the Panel's recommendations, rejected two, and in its initial response had "partially" accepted three, two of which pertain to CIP's convening role of the Global Mountain Program (GMP) and Urban Harvest (UH) SWEPs. The issue for the latter two recommendations is that in the Panel's and the SC's view, these SWEPs do not contribute to CIP's core research, nor does their work pertain to the Center's comparative advantage. UH, furthermore, does not contribute to the SP either in its research on IPGs or on the focus on key ecosystems. The other "partially" accepted recommendation refers to recommendation 1 on regional programs and partnerships, where CIP accepts rec. 1(i), that the Centre create a Division on Partnerships and Research on Partnerships, but does not accept rec. 1(ii), that CIP establish Directors for each of the Center's four regions. The SC notes that the CIAT EPMR also has recommendations about the planning and focus of regional research (i.e. the concept of "output lines ") that might be of relevance to CIP, and looks forward to seeing how CIP manages the regional aspect of its research to maintain a focus on IPG research.

CIP does not accept recommendation 11, that CIP "phase-out" the Agriculture and Human Health (AHH) Division and instead integrate AHH research into the work of the Center's other Divisions; and recommendation 12, that CIP disengage from convening CONDESAN. In developing the SPs, the SC was aware of the important link between food and health as a crosscutting issue. In the SC's view, the linkage is best achieved through partnership with the health sector, rather than by including health expertise within the CGIAR scientific capacity. Thus the SC agrees with the Panel's recommendation that CIP phase out the AHH Division, and suggests that CIP continue to undertake work on the food-health linkage in nutrition and in health issues from the misuse of pesticides in

potato/sweet potato systems, while seeking partners with expertise in the health sector.[2] In the case of CONDESAN, the SC agrees with the finding of the Panel (see below for details).

Based on the Panel's assessment and evidence provided in the report, the SC endorses the findings of the review and its 18 recommendations. Nevertheless, the SC understands that implementing the recommendations will have financial implications, which implies the need for careful financial planning, and that in disengaging from its hosting role of GMP, UH and CONDESAN, CIP will need to design appropriate exit strategies. Key issues addressed in the review are further discussed below.

Visioning and Strategic Planning

The SC shares the Panel's concern that CIP's recently finished Strategic Plan was developed to address MDGs, but does not relate to the CGIAR System Priorities (SP) explicitly. The SP was also developed in the context of the MDGs, but with rigor to focus on the priorities for the CGIAR. Thus the Panel notes that the process used by CIP broadens the scope of the strategic areas (over the SP), and that this may be at the risk of moving CIP away from its core business. The SC is also concerned that the Center's strategic planning exercise appears not to have made use of its own *ex-ante* impact assessment study (Fuglie 2005). The study underlines CIP's, "excessive" concentration of work in Latin America compared to the expected benefits to the poor, which is, according to the Panel, mainly donor-driven. The SC finds CIP's justification in this respect, that LAC has been an "IPG generator" for CIP, and that CIP "does a lot of its learning" in that region, not fully convincing. Furthermore, while this lack of congruence between regional research resource allocation and expected benefits raises some important strategic considerations, it would be important to confirm that spillovers have been explicitly captured in Fuglie's analysis, as their existence can vitiate use of a simple congruence approach in such comparisons.

Regarding CIP's new programmatic structure, it is not clear to the SC why CIP has moved away from a project mode of management. HQ and regional integration can be facilitated through projects operated in a matrix mode, and the two dimensions are not necessarily in conflict if this is managed appropriately.

The Panel's recommendation on regionalization is not accepted by CIP, in view of the history of this at the Centre. CIP now conceives Regional hubs as only intended to be outcome vehicles to the research done at HQ, and considers that the creation of Regional Directorates would "be problematic" and would constitute an "institutional step backwards". The SC wonders whether this represents another "back to the future" pendulum effect of successive EPMRs, as noted by the SC in other recent Centre EPMRs. In this context, it would have been informative if the panel had interviewed the immediately preceding DG. His views would have complemented those of CIP's founding DG, who was interviewed by the panel, and whose views the panel reports extensively in an annex to the report. The views of CIP's preceding DG would have had special weight, as the current EPMR covered a period when he was in office for some 70% of the time examined by the review.

Research Programs

The Panel criticizes social sciences work at CIP for ignoring the 2002 EPMR, and in particular for dropping adoption and priorities studies. As with other Centers, social science has lost focus and human resource capacity in recent years, especially economists. Because of the widespread problems in social science research in the CGIAR, the SC is planning a stripe review in 2008. It is anticipated that this review will provide insights that will also be useful for CIP. Thus the SC advises CIP to work

[2] Note there are examples of this linkage in the CGIAR, e.g. the work on human nutrition in the CP HarvestPlus and the study by Pingali etc al that linked excessive pesticide use in rice to poor health. In this study, the health research was conducted by the medical sector.

closely with the SC Stripe review when it convenes the CCER on social science research recommended by the Panel.

The SC agrees with the Panel, that potatoes and sweet potatoes should be the focus of CIP's efforts on germplasm conservation and characterization, and that the characterization of 9 additional roots and tubers should concentrate on genetic diversity of germplasm, and should no longer involve breeders' traits of interest or nutritional and health related attributes; especially since, as claimed by the Panel, the discovery of useful bioactive ingredients and the additional fine work of characterization and evaluation probably needs more resources than currently available to CIP. Nevertheless, and notwithstanding CIP's explanation that lack of sufficient funds to speed-up the work on germplasm conservation and characterization is directly related to the drop in core funding, this remains an important concern for the SC, for CIP, and for the System as a whole. This work should be the heartland activity for CIP and for the System, and the SC concurs with the Panel about the importance of adequately resourcing this core business of the CGIAR.

The SC notes with some surprise the low adoption of CIP-derived varieties relative to the high number released. The SC suggests that the reasons for this need to be at the centre of its decision about the management of its regional research, such that: a) parental lines/varieties expressing superiority over existing cultivars, and possessing required regional attributes are developed; and b) the main research interventions for better outcomes are identified; c) NARS collaborative roles in this regional strategy are clarified; and, d) IPR issues are suitably addressed.

The Panel notes that NRM research uses and develops models, and that most of the outcomes will come from transfer of the models to researchers and policy makers. However, the SC sees that there are few examples of the latter, and so it will be important for CIP to demonstrate that its models are being adopted and used to generate on-the-ground impacts. Sometimes modelers so differentiate and protect their intellectual property and products that outcomes can be precluded, and therefore CIP's NRM strategy should address such IPG issues thoroughly. The fact that CONDESAN found that scaling up of accumulated NRM knowledge has had limited results, and that the benchmark sites approach has now been abandoned, gives the SC added cause for concern in this respect. Based on similar concerns, the 5th (2002) EPMR asked CIP to conduct a priority setting exercise for NRM, "using an appropriate methodology, to help focus the research agenda and develop a proper balance between process oriented and application oriented research...". CIP accepted the 2002 EPMR recommendation on NRM, claims that it has implemented it "incrementally", and commissioned an NRM CCER in early 2007 to obtain expert evaluation on progress made. However, when the Panel analyzed the ToR of the 2007 NRM CCER, it found, instead, that the CCER aimed to shed light on CIP's options and means of addressing the 2002 EPMR recommendation. Nevertheless, the Panel concurs with the CCER's conclusions that a priority-setting exercise for CIP's NRM research has not yet been conducted. Although it seems somewhat prescriptive for the Panel to indicate that the Centre should initiate the NRM priority-setting exercise without further delay, the SC understands that CIP has postponed this exercise for over five years now. The SC notes that the CIAT EPMR also provides good insights into the conduct of NRM research that may be of benefit to CIP.

Partnership programs

The CGIAR conducts its research with a wide array of partners and through different mechanisms, of which networks are one. There is a generic issue in judging when, after periods of successful activities, the needs of both the Centers and the partners are best met by handing leadership responsibilities to others. Regarding CIP's role in hosting CONDESAN, the Panel states that the Program and CIP "have no extant, significant and fruitful working relations", in spite of strong 2002 EPMR recommendations in this regard, that CONDESAN "is no longer contributing to CIP's core research", and that although CONDESAN "is a success", it has "gone beyond" CIP because it has stopped its work on benchmark

sites and has refocused its activities on "innovation systems" and water management, thus erasing the logic of CIP continuing to convene the program. The SC agrees with the Panel's analysis and conclusions in this respect, reminds CIP that relinquishing hosting need not imply that no joint research is carried out, and hopes that the new Coordinator and Road Map strengthen CONDESAN and allow CIP to further engage in joint research with the program.

Governance and Management

The Panel's assessment of CIP's governance and management finds the Centre well governed, with responsive leadership and management, but with space to improve Board delegation of leadership responsibilities and replacement processes, as well as human and financial resource management.

CIP RESPONSE TO THE 6TH EXTERNAL PROGRAM AND MANAGEMENT REVIEW PANEL RECOMMENDATIONS

CIP Management and the CIP Board of Trustees considered the 6th External Program and Management Review (EPMR) at its third Board meeting of 2007 (20 July 2007).

We welcome the overall message from the EPMR Panel to the Centre that CIP is a well-governed, well-managed, and fiscally healthy Centre with an excellent program of research. And we are grateful for the dedicated work of the Panel to provide formal recommendations and advice that they feel conducive to strengthening and moving the Centre forward.

Specifically, we are pleased that the Panel has commended the CIP Vision and Strategic Planning exercise and that the Panel took particular note of the quality and relevance of the new geographical targeting, which highlights the actual and potential contributions of potato and sweet potato to poverty and hunger alleviation.

We are grateful that the Panel recognized that the Centre has developed excellent skills for networking and capacity building globally and regionally, and has gained a position as a "convening Centre". We view the continued strengthening of partnerships – the 4th pillar of the CG System - to be a critical investment for what the Panel commends as CIP's role as a "research partner for development".

Finally, we acknowledge that the Panel feels the CIP Board has paid particular attention to governance issues and responsibilities, including Board training, Board procedures and inclusive decision-making processes. The Panel has also noted the Center's growth in financial revenues and human resources during the period under review, and recognized that the Center's cautious management during this period has resulted in a sound financial position.

In summary, of the 18 recommendations given to CIP by the 6th EPMR Panel, we accept 13 recommendations, partially accept 3 recommendations, and do not accept 2 recommendations. The CIP Board recognizes that several of the EPMR Recommendations will require substantial financial resources; we will count on support from our donor partners for proper implementation. Detailed responses to the Recommendations are provided in the following section.

RECOMMENDATIONS AND RESPONSES

CHAPTER 2 – CIP'S VISION EXERCISE AND STRATEGIC PLAN

#1. The Panel recommends that the current organizational structure be modified to include:

(i) A Division on Partnership and Research on Partnerships, with the double mission of: (1) assisting CIP in the development of regional and country program partnerships specifically oriented to the mobilization of the Center's main OUTPUTS; and (2) conducting research of an international-public-goods nature in the field of CGIAR System Priority 5C, Rural Institutions and their Governance, whose goal is: "To enhance the role that rural organizations and innovative institutional partnerships play in maximizing impact from agricultural research and in creating marketing platforms for smallholder producers."

(ii) An identifiable space for CIP's Regions as Regional Programs – with true Regional Directors; (1) to design and implement regional and country partnerships, joint research activities in association with the Research Divisions, training programs and events; and (2) to realize the potential research spillovers among countries within and across Regions.

CIP Response: **PARTIALLY ACCEPTED**

Since 1992, when CIP had 8 Regional Programs and 8 Regional Directors who responded directly to the DG, the Centre has worked consciously to integrate CIP's research and training

into one coherent Program, under the leadership of the Director of Research. Creating Regional Programs and Regional Directors would represent an institutional step backwards. Further, given the size of the Centre, we do not feel that it is sensible to move from 3 to 7 Directors (if each of the 4 Regional Leaders were converted into Director positions). However, we do understand and appreciate the spirit of Recommendation 1(ii) to be that we need to strengthen and empower our research and research leaders in the regions. We welcome and accept this advice. Some of that empowerment and increased freedom of operation will come through the implementation of advice and recommendations brought forth in other sections of this EPMR report.

2. The Panel recommends that CIP develops a completed version of its Strategic Plan that includes the following considerations:

(i) The relevant Millennium Development Goal targets to which CIP expects to make a contribution through its research of an international-public-goods nature should be clearly defined as "impact boundaries" in the typical sequence:
Inputs →outputs→outcomes→impacts

(ii) The Centre "output boundaries" should be clearly recaptured as being new potato, sweet potato and Andean Roots & Tubers technologies, plus the policies and institutional innovations related to these commodities.

(iii) An analysis of the needs and opportunities in the target areas *vis-à-vis* the CGIAR Science System Priorities should be conducted for a better alignment of CIP's research portfolio.

(iv) Based on the needs and opportunities assessment of target areas (following CIP's Pro-Poor Research and Development cycle) plus the available scientific information and impact assessment analyses, a more robust, cohesive and internally complementary set of priorities should be developed together with a business plan.

CIP Response: **ACCEPTED**

CHAPTER 3 – QUALITY, RELEVANCE AND IMPACTS OF CIP'S RESEARCH PROGRAM

3. The Panel recommends that a CCER be commissioned immediately to review the Division's current goals, research agenda and human resources; that the CCER's recommendations be acted-upon immediately after the review's completions; and that the CCER's Terms of Reference:

i. require that the Review produce a well-defined strategy, research agenda and needed human resources; and
ii. Consider the desirability of making this Division the integrator of social science research at CIP as a means to make further progress in the implementation of the 2002 EPMR recommendations 6, 7 and 8.

CIP Response: **ACCEPTED**

4. The Panel recommends that CIP:

i. Accelerate the characterization of the remaining genotypes in the Center's gene bank, and that this be completed for all key traits;
ii. produce a compendium based on passport, morphological and molecular data and characterization results for key biotic and abiotic stresses; and
iii. Make this information widely available to all collaborating NARS to enable them to make choices of what may be needed to enhance their genotype selection and crossing schemes.

CIP Response: **ACCEPTED**

5. The Panel recommends that CIP implement fully-fledged potato and sweet potato breeding activities at the regions so that parental lines/varieties expressing superiority over existing cultivars, and possessing required regional attributes are developed.

CIP Response: **ACCEPTED**

6. The Panel recommends that CIP focus on developing breeding lines tolerant to these stresses [warming and water scarcity], by using biotechnological as well as conventional approaches to develop practical screening techniques.

CIP Response: **ACCEPTED**

7. The Panel recommends that CIP make a full assessment of the actual and potential constraint to regional potato production posed by nematodes (PCN and free-living), and plan its research on integrated crop management accordingly.

CIP Response: **ACCEPTED**

8. The Panel recommends that the Integrated Crop Management Division should take up the opportunity to investigate jointly options for drought avoidance and tolerance, jointly with other Divisions.

CIP Response: **ACCEPTED**

9. The Panel recommends that CIP implement Recommendations 1 to 6, and Recommendation 8; (2) CIP implement Recommendation 7, with reservations; and (3) CIP not implement Recommendations 9 and 10 of the 2007 NRM CCER, unless these actions are dictated by the priority-setting exercise.

CIP Response: **ACCEPTED**

10. The Panel recommends that: (1) CIP uses the 2007 NRM CCER's analysis and recommendations, and the Panel's reaction to them, as inputs to conduct a sounding priority setting exercise, as recommended by the 2002 EPMR; and (2) CIP initiates that exercise without further delay.

CIP Response: **ACCEPTED**

11. The Panel recommends that: (1) the Agriculture and Human Health Division be phased out; more specifically, that agricultural-health interface activities (crop breeding for bio-fortification, reduction of pesticide exposure and the needed trans-disciplinary research to integrate agriculture and health) be carried out through joint research activities and promotion of partnerships (for output mobilization) under the leadership of CIP's other Research Divisions; and (2) CIP agrees the terms of the recommended "phasing out" with all concerned parties, taking into account projects underway and people involved.

CIP Response: **NOT ACCEPTED**

In the April 2007 meeting of the CGIAR Alliance, the new Science Council Chair, Dr. Roedolf Rabbinge, shared with the Alliance Board Chairs and DGs his vision of the seven stages of evolution that the CGIAR has moved through (1. Green Revolution breeding centres; 2. Addition of other agronomic disciplines (e.g. plant protection); 3. Addition of farming systems research and policy; 4. Addition of non-productivity goals (e.g. NRM); 5. Integration of levels (e.g. the eco-regional approach); 6. Global challenge programs; and 7. Collaboration with other Systems through partnership platforms). Dr. Rabbinge further indicated his belief that we are currently faced with the challenge of moving the System from the 6th to the 7th stage of evolution, i.e. to the challenge of creating partnerships with other R&D systems. We agree with this analysis and, within this evolutionary framework, view the new Research Division on Agriculture and Human Health as a critical vehicle to articulate the agriculture and human health research systems.

Historically, the sectors of agriculture and human health have been compartmentalized, both in research and in development efforts. Agricultural technology and interventions present opportunities to enhance human health and also present the challenge of minimizing the potential risks to human health caused by agricultural activities. Over the past decade, CIP has generated unique bodies of research outputs that are the direct result of building cross-sector, trans-disciplinary teams (agricultural scientists, economists, social scientists, public health specialists). For example, our research has documented that acute poisoning events from the use of highly toxic pesticides: 1) result in neurobehavioral/cognitive impairment that (in North America) would qualify farm workers for disability insurance; 2) affect not only the farm worker but the entire farm family, through various contamination pathways; 3) handicap decision-making capacity of the farm families; and 4) result in an estimated 15% reduction in farm productivity. Thus, we come to the counter-intuitive result that the application of these pesticides does not increase farm productivity, rather (via the human neural circuit) reduces productivity. Our understanding of increased farm productivity must move beyond the traditional frame of increased land/unit productivity. The intellectual argument is that explicit cross-sector research leads to understandings and insights that would not be gained by considering the "agriculture-human health interfaces" as by-products of crop breeding or integrated pest management research.

But, we are not over-dimensioning this investment. The establishment of Agriculture and Human Health as a distinct Division at CIP involves only a modest investment (4% of our total research budget). The creation of this Research Division validates the cross-sector approach and has allowed us to attract a public health epidemiologist (MD) as the Leader for the Research Division. The Division Leader functions as a bridge between agricultural researchers in the Centre and the international public health research system. As this Division moves forward, it is anticipated that much of the research will be carried out by linking with and mobilizing research talent in partner institutions.

12. The Panel recommends that: (1) CIP disengages from convening CONDESAN; (2) the Board of CONDESAN, the Head of the Coordination Unit, and CIP, in coordination with the Alliance, discuss and agree on the exit strategy, and define a working plan for a three-year transition period; and (3) this working plan addresses the financial repercussions for CONDESAN and CIP.

CIP Response: **NOT ACCEPTED**

CIP understands and appreciates the conceptual framework proposed by the EPMR Panel, i.e. that the Partnership Programs should function as vehicles for mobilizing CIP's research outputs in order to enhance outcomes and impacts, and that the Center's strategic thinking should include the identification, creation and promotion of CIP Partnership Programs that serve this purpose. This is insightful and constructive advice. However, three of the current Partnership Programs are CGIAR partnership programs, known as System wide and Ecoregional Programs (SWEPs). The SWEPs were not conceptualized to serve any one particular Centre.

Recommendations 12, 13 and 14 of this EPMR Panel suggest that the CGIAR System needs further discussion and clarification on the function of the SWEPs within the System. CIP would welcome such a discussion at the System level and feels that until such a discussion is undertaken; it would not be responsible to disengage from the SWEPs that it hosts. Based on the same argument as provided in our response to Recommendation 11, i.e. the importance of evolving and strengthening CGIAR partnership platforms, we feel that the Alliance of CGIAR Centres should be working to increase the functionality of the SWEPs rather then disengage from them.

With specific reference to Recommendation 12, CIP hosts CONDESAN as a service to the CGIAR and the Andean research and development community. Since its establishment in 1993, the CONDESAN consortium has evolved into a diverse, regional R& D platform that links CIP and CIAT to 70 partners, including a network of 16 universities (from the north and south), the private sector, NGOs, governmental organizations and inter-governmental bodies. CONDESAN creates

synergies among CIP, CIAT and other CG programs including the Global Mountain Program, Initiative for Learning and Change (ILAC), and the Challenge Program on Food and Water, for which CONDESAN coordinates the Andean System of Basins. CONDESAN serves as a link between the CGIAR and UN systems through a significant GEF-funded project and a FAO-funded policy initiative. The UN- based Mountain Partnership (MP) has just decentralized their operations, designating CONDESAN as the Latin American hub for the MP.

Previously, the Science Council has commented: "In the context of providing solutions to sustainable development of an eco-region, which is a complex task, the contribution of CONDESAN to the progress of the Andean Eco-region deserves praise. The continued operation of the network will also provide CIP with feedback for maintaining a relevant research agenda in the future" (response to MTP 2006-2008). While both the CIP and CONDESAN Boards agree with the spirit of the EPMR panel's advice, i.e. that the partnership programs are critical vehicles for mobilizing CGIAR research outputs, and CONDESAN will continue to strengthen links with the CG Centres, this point by the Science Council is of equal value. The partnership programs should be seen as critical vehicles for providing feedback to the CGIAR Centres on the regional needs and opportunities.

To this end, as the partnership has matured, under the able leadership of the CONDESAN Board, the content of the Program has become more focused and even more relevant to needs and opportunities for sustainable socio-economic development of the Andean region. The new Road Map prioritizes R& D on management of water resources, and innovation. As this EPMR Panel points out in several other sections of the Report (and emphasizes in Recommendations 6 and 8) serious and systematic attention to water/climate issues will become increasingly important. The research and policy agenda that CONDESAN is developing, within the new Road Map, is fundamental to the production of potatoes and all other commodities that depend on the water supply from the Andean System of Basins, and is highly complementary to the basic research that is being carried out by CIP on breeding for abiotic stresses and enhancing system resilience. We will continue to support the evolution of this partnership platform and strengthen our research contributions to its agenda.

13. The Panel recommends that: (1) CIP disengages as the convening Centre for the GMP; the Board of the GMP and CIP, in coordination with the Alliance, discuss and agree on an exit strategy and a working plan for a transition period; and (3) this working plan address the financial repercussions for the GMP and CIP.

CIP Response: **PARTIALLY ACCEPTED**

The mountain regions of the developing world are pockets of extreme poverty. The Global Mountain Program is the CGIAR's vehicle for adding value to the eco-regional mountain programs (CONDESAN, African Highlands Initiative, International Centre for Integrated Mountain Development) and linking the mountain research agenda to other international platforms and systems (Mountain Research Institute, Mountain Partnership, Mountain Forum, Adelboden Group, FAO Sustainable Agriculture and Rural Development in Mountains).

Prior to 2004 the GMP was a sub-project within CIP's Natural Resources Management Project - linked much too tightly and specifically to CIP. Since 2004, with the CIP restructuring that gave GMP visible status as a partnership program, the newly-recruited Program Coordinator has worked to forge more appropriate system wide linkages across regional programs and with international programs; the Program structure and linkages as well as the financial status are much-improved. Nonetheless, CIP agrees with the EPMR panel that the GMP research outputs and outcomes still need to be more clearly focused and defined. Steps forward are reflected in the 2008-2010 Medium Term Plan. We will make every effort to strengthen the research content and oversight of this Program.

14. The Panel recommends that: (1) CIP disengages from being the convening Centre for the Urban Harvest SWEP; (2) CIP sets terms of disengagement in coordination with the

Alliance; and CIP assure donors to this Program that CIP will carry on its responsibilities until the completion of current project activities.

CIP Response: **PARTIALLY ACCEPTED**

The dichotomy between rural and urban is rapidly breaking down. New forms of multi-locational household arrangements are emerging that span rural and urban areas and combine a wide range of farm and non-farm livelihood strategies, which families are obliged to adopt in the 21st century developing world. Half of rural household income in Sub-Saharan Africa has been found now to derive from non-farm sources, with 15% from urban-sourced remittances. In some developing countries, as little as 10% of urban-based workers enjoy formal, stable employment and therefore must engage in diverse food security and income generation based livelihood strategies, including urban agriculture. Higher land prices in urban and peri-urban areas compared to rural areas, as well as unstable labour markets demand urban producers to seek to increase labour productivity and intensified land productivity. Urban and peri-urban systems such as horticulture and zero-grazed livestock are typically much more intense than rural systems. Increased labour productivity and intensified land productivity in urban systems will depend upon technologies that are not yet developed and available, highlighting the need for a greater contribution from urban and peri-urban oriented agricultural research.

The Urban Harvest Program does not naturally fit with any single CGIAR Centre. CIP hosts this SWEP to provide a CG partnership platform for early R& D investment in urban production systems and to improve understanding of urban poverty and rural-urban livelihood linkages. A number of developments inside and outside the CGIAR indicate a growing recognition of and adjustment to the Urbanizing Developing World and suggest that it would be a premature to disengage from Urban Harvest at this time:

- The recent decision by the World Bank to merge its vice-presidencies for sustainable rural development and urban development into a single vice-presidency on Sustainable Development;
- Traditional CGIAR donors (e.g. IDRC, Rockefeller Foundation) have strengthened their funding strategies to explicitly emphasize the urbanizing world;
- Historical CGIAR country partners (e.g. Egypt, Kenya) and regional networks (e.g. CORAF) have incorporated urban and peri-urban agricultural research and development issues within their programs; FARA strongly endorsed a meeting on urban horticulture as part of their 2007 annual meeting in Johannesburg;
- A clear consensus by stakeholders on the key role of peri-urban horticultural systems in the formulation of the new Challenge Program pre-proposal on High Value Crops that is under development.

There is a need to move this program forward, not disengage. CIP agrees with the EPMR Panel that the UH research outputs and outcomes must be strengthened. We propose to undertake a CCER of Urban Harvest, with ToRs that will include developing recommendations on clarification of the program's conceptual framework; identification of the critical, global research questions that should drive the Program forward; and better articulation of this CGIAR research Program with emerging R&D programs on urban and peri-urban production systems.

CHAPTER 5 – GOVERNANCE

15. The Panel recommends that the Board pay urgent attention to the systematic rotation and replacement of Board positions, and to Board and Committee leadership and succession planning.

CIP Response: **ACCEPTED**

16. The Panel recommends that the Board establish a systematic and comprehensive schedule of programmatic CCERs for the next five-year period and that funds be budgeted for this purpose.

CIP Response: **ACCEPTED**

CHAPTER 6 – MANAGEMENT AND FINANCE

17. The Panel recommends that: (1) CIP budget annually and explicitly, for Board approval, its capital expenditures, based on the Center's actual needs; and (2) that the Centre allocate the necessary funds to respond to the most urgent needs as identified in its recently prepared capital assessment plan.

CIP Response: **ACCEPTED**

18. The Panel recommends that CIP invest, without delay, in a commercially available ERP suitable to its requirements.

CIP Response: **ACCEPTED**

Edgardo Moscardi
Av. Chenaut 1957, 11B
Buenos Aires, Capital Federal, 1426
Argentina
Tel: (+54) 11 47781257;
Mobile: (+54) 91161375506
email: emoscardi@mac.com

15 July 2007

Dr. Roelof Rabbinge
Chair, Science Council
Consultative Group on International Agricultural Development
University Professor
Wageningen University
Lawickse Allee 11
6701 AN Wageningen
The Netherlands

Dr. Ren Wang
Director
Consultative Group on International Agricultural Development
The World Bank
1818 H Street, N.W.
Washington, D.C. 20433, USA

Dear Drs. Rabbinge and Wang,

On behalf of the Panel, I am pleased to transmit to you the Report of the Sixth External Program and Management Review (EPMR) of the International Potato Center (CIP). The Panel has reviewed CIP's performance in the four broad areas of: i) mission, strategy and priorities; ii) quality and relevance of the science; iii) effectiveness and efficiency of management (including governance and finance); and iv) accomplishments and impacts. We have also addressed the list of strategic issues received from the Science Council.

The Panel finds CIP a Center much improved since the last EPMR, but that relies too heavily on restricted funding. Today, CIP's agenda is almost entirely financed by so called "research contracts", contracts that often include resources for broad development endeavours that go beyond CIP's expertise and comparative advantage, affecting CIP's core work significantly. Committed to adapt itself to this change in its external environment, CIP has undertaken a Visioning Exercise, drafted a Strategic Plan, and revised its research structure as a result. And although these efforts are commendable, the Panel finds that CIP's Strategic Plan still lacks clear research priorities and needs a business plan. The Panel is convinced that the Center's new research structure, which reflects the Center's funding reality, has seriously limited, not increased, its ability to adjust to new situations and to take advantage of new opportunities. CIP has drifted away from its core areas of research

on potato and sweetpotato germplasm characterization and improvement, and has weakened its regional work, essential to ensure that the output-outcome inter-phase is realized.

The Panel finds CIP to be a well governed institute with responsive leadership and management. Under the dedicated leadership of the present Chair, the CIP Board has paid considerable attention to governance issues, procedures and training. However, it has not been fully effective in its delegation of leadership responsibilities and replacement processes. In addition, Center management needs to put more attention on human resource management and capital investments.

It is quite evident to the Panel that CIP has a clear and relevant future down the road. The high positive correlation between potato/sweetpotato production areas and poverty assures CIP that by concentrating its research work on these two commodities, significant economic, employment, health and other beneficial impacts on the poor can be realized. The eighteen recommendations that the Panel has put together as result of this EPMR should help CIP to move forward in this direction.

Finally, the Panel members join me in expressing our appreciation for the opportunity to participate in the challenging task of conducting this Review, and for the Science Council's support through Beatriz Avalos, Panel Secretary. We hope that the Report will be useful to CIP and its partners, as well as to the CGIAR.

Yours sincerely,

Edgardo Moscardi
Panel Chair
Sixth EPMR of CIP

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

SCIENCE COUNCIL AND CGIAR SECRETARIAT

Report of the
Sixth External Program and Management Review (EPMR) of the International Potato Centre (CIP)

Review Panel: Edgardo Moscardi (Chair)
Malachy Akoroda
Jay Gopal
Donald McKerron
Julie Noolan
Carlos Pomareda
Alejandro Avedissian (Consultant)

SCIENCE COUNCIL SECRETARIAT

JUNE 2007

CONTENTS

FIGURES

TABLES

ANNEXES

SUMMARY

During the last five years CIP has undergone a series of important changes that have affected significantly the life of the Centre. Soon after the 2002 EPMR, the Centre committed itself to produce the necessary changes to adapt to "corresponding changes" in its external environment. The high positive correlation between potato/sweet potato production areas and poverty assures CIP that by concentrating its research work on these two commodities, significant economic, employment, health and other beneficial impacts on the poor can be realized. Indeed, a recent ex-ante impact assessment study conducted by CIP shows that the Center's research agenda offers significant opportunities to contribute to the Millennium Development Goals (MDGs) over the coming decades. It has been quite evident to the Panel that CIP has a clear and relevant future down the road.

The Panel has conducted the 6th EPMR addressing three dimensions of CIP's work: (1) Vision and strategic directions (a view of future outputs and impacts); (2) research results (outputs, outcomes and impact), plus the quality and relevance of research (quality of inputs, research processes and outputs); and (3) governance and management efficiency (converting inputs into outputs). In order to address these three dimensions of CIP's work comprehensively and rigorously, the Panel met with Board members, scientists, administrators, as well as a range of stakeholders, both at headquarters and site visits to several countries within the four CIP's regions.

Vision and Strategic Planning

This Panel's recommendations regarding the Centre Vision and Strategic Plan focus on the following issues: First, they address the additional objectives from the Visioning exercise, which, in the Panel's view, are outside CIP´s core comparative advantages. Next, they refer to CIP's new organizational structure, which is based on Research Divisions and Partnership Programs, which resulted from the Vision exercise, and which substituted the previous "project" based research structure). In the Panel's view, CIP needs to open a space for partnerships and research on partnerships, and to empower CIP's regions to assure that the output-outcome inter-phase is realized. Lastly, recommendations address CIP's Strategic Plan, which still needs to be completed, among other things, by integrating a business plan.

Research Programs

The Centre research programs include work on germplasm conservation and characterization; crop improvement and protection; integrated crop and natural resource management; agriculture and human health; social sciences; and urban and peri-urban agriculture.

This Panel's recommendations regard CIP´s main technology supply factory (germplasm-breeding-protection), on which the Centre has established a clear scientific and institutional identity. They address the need for CIP to speed up germplasm characterization, to implement full-fledged potato and sweet potato breeding activities at the regions, to give more emphasis to water scarcity and water and temperature stress through breeding and crop protection; and to assess the problem of nematodes as a potential constraint to potato production.

CIP´s Natural Resource Management (NRM) work is carried out by three units: The NRM Division, CONDESAN and the Global Mountain Program (GMP). A CCER conducted in early

2007 for the NRM Division to address questions of critical mass, conceptual framework and linkages to CIP´s commodity research, recommended the need to develop a "road map" and a "tool kit". After reviewing the CCER, ***the Panel recommends*** that CIP use the CCER´s analysis as an input to conduct the sound priority-setting exercise recommended by the 2002 EPMR. Regarding CONDESAN and the GPM, two ecoregional System Wide Programs (SWEPs) currently convened by CIP, the Panel found no evidence of any significant contribution to CIP´s research outputs. Based on this, the Panel has recommended that CIP disengage from convening both Programs.

CIP´s Agriculture and Health program seeks to promote the agriculture-health inter-phase through activities such as crop breeding for bio-fortification and pesticide reduction. This program constitutes one of CIP's new Research Divisions, developed from the Vision exercise. Since the value added of this Division is negligible due to the absence of research outputs of an IPG nature, and part of its work is outside CIP's core comparative advantage, the Panel has recommended that this Division be phased-out and that its relevant agriculture and health research activities be mainstreamed into the work of other Divisions related to human health.

The Social Sciences program at CIP has traditionally been integrated with biological and physical scientists. Relevant work of this program has been related to: economic trends affecting potatoes and sweet potatoes, adoption and diffusion of CIP-related technologies, science and technology policy issues pertinent to potatoes and sweet potatoes in the developing countries, institutional social science capacities in NARS, and impact assessment of new technologies on different outcomes. In 2004, CIP dropped its previous "project" research structure, where some of the social scientists were placed, and designed an Impact Enhancement Division. In the opinion of the Panel, during the last years the Social Science program at CIP has lost focus and the necessary human resource capacity. The Panel recommendation is that a CCER be commissioned to review this program's current goals, research agenda and staffing.

CIP's initiative on urban and peri-urban agriculture, housed by the Urban Harvest system-wide program convened by CIP, is supposed to be the strategy to address the development of "resilient, sustainable urban livelihood systems" to contribute to "improved lives of slum dwellers", as one of the MDG targets selected by CIP as part of the Visioning exercise. In the opinion of the Panel, the Urban Harvest program is neither complementing CIP's main outputs nor is it addressing any of the CGIAR system priorities. Thus, ***the Panel recommends*** that CIP disengages from being the convening Centre for the Urban Harvest SWEP.

Governance, Management and Finance

The Center's policies, vision, mission and strategic directions, aka "governance", are within the work of the BoT charged as well with the fiduciary responsibility of the Center's work. The Panel has examined Board responsibilities according to the newly revised CGIAR Roles, as in the document "Responsibilities and Accountability of Centre Boards", the report on "Stripe Review of Corporate Governance of CGIAR Centres", and the 2005 CCER on Financial Systems, Reporting and Controls.

During the time of the review, CIP experienced incumbent changes in both the Board Chair and the Director General positions. The size of the BoT was reduced by one position and the number of Board meetings was increased from two to four (two face-to-face and two via teleconference).

The Panel recommendations on Governance were the following: urgent attention to the systematic rotation and replacement of Board positions, establishing a comprehensive schedule of programmatic CCERs, appropriate budgeting (with Board approval) of capital expenditures, and investing in a commercially available ERP (enterprise resource planning) to enable both research and corporative services to work more efficiently and accurately.

RECOMMENDATIONS

Visioning and Strategic Planning

Recommendation 1. Because of the need to improve the effectiveness, transparency and visibility of the CIP program structure components, ***the Panel recommends*** that the current organizational structure be modified to include:

i. A Division on Partnership and Research on Partnerships, with the double mission of: (1) assisting CIP in the development of regional and country program partnerships specifically oriented to the mobilization of the Center's main OUTPUTS; and (2) conducting research of an international-public-goods nature in the field of CIGAR System Priority 5C, Rural Institutions and their Governance, whose goal is: "To enhance the role that rural organizations and innovative institutional partnerships play in maximizing impact from agricultural research and in creating marketing platforms for smallholder producers." The additional work needed to complete the implementation of the 2002 PERM recommendation regarding the need to formulate a strategy for engaging in different types of partnerships (See Chapter IV, Crosscutting Issues), should be developed under this new Division.

ii. An identifiable space for CIP's Regions as Regional Programs - with true Regional Directors: (1) to design and implement regional and country partnerships, joint research activities in association with the Research Divisions, training programs and events; and (2) to realize the potential research spillovers among countries within and across Regions.

Recommendation 2. Because CIP must have in place a sound Strategic Plan to guide the Centre through global changes in the policy and science environments, and to make the Center's direction clearer in terms of research priorities in response to the needs of the poor potato and sweet potato producers in the identified target areas, ***the Panel recommends*** that CIP develop a completed version of its Strategic Plan, that includes the following considerations:

i. The relevant Millennium Development Goal targets to which CIP expects to make a contribution through its research of an international-public-goods nature should be clearly defined as "impact boundaries" in the typical sequence: inputs → outputs → outcomes → impacts.

ii. The Centre "output boundaries" should be clearly recaptured as being new potato, sweet potato and Andean Roots & Tubers technologies, plus the policies and institutional innovations related to these commodities.

iii. An analysis of the needs and opportunities in the target areas *vis-à-vis* the CGIAR Science System Priorities should be conducted for a better alignment of CIP's research portfolio.

iv. Based on the needs and opportunities assessment of target areas (following CIP's Pro-Poor Research and Development cycle) plus the available scientific information and impact assessment analyses, a more robust, cohesive and internally complementary set of priorities should be developed together with a business plan.

Research and Partnership Programs

Recommendation 3. Because the Panel has observed that the work of the Impact Enhancement Division lacks a sound strategy on socio-economics at CIP and the appropriate human resource capacity to carry out quality research on the Division's stated goals, ***the Panel recommends*** that a CCER be commissioned immediately to review the Division's current goals, research agenda and human resources; that the CCER´s recommendations be acted-upon immediately after the review's completion; and that the CCER´s Terms of Reference:

i. require that the Review produce a well-defined strategy, research agenda and needed human resources; and

ii. Consider the desirability of making this Division the integrator of social science research at CIP as a means to make further progress in the implementation of the 2002 EPMR recommendations 6, 7 and 8.

Recommendation 4. Because the characterization of genetic resources is important for its utilization in the breeding program, and because this process has been relatively slow at CIP, ***the Panel recommends*** that CIP:

i. Accelerate the characterization of the remaining genotypes in the Center's gene bank, and that this be completed for all key traits;

ii. produce a compendium based on passport, morphological and molecular data and characterization results for key biotic and abiotic stresses; and

iii. Make this information widely available to all collaborating NARS to enable them to make choices of what may be needed to enhance their genotype selection and crossing schemes.

Recommendation 5. Because of the low adoption of CIP-derived varieties relative to the high number released, ***the Panel recommends*** that CIP implement full-fledged potato and sweet potato breeding activities at the regions so that parental lines/varieties expressing superiority over existing cultivars, and possessing required regional attributes are developed.

Recommendation 6. Because warming and water scarcity are perceived as increasing constraints to sustainable agriculture as a result of climate change, ***the Panel recommends*** that CIP focus on developing breeding lines tolerant to these stresses, by using biotechnological as well as conventional approaches to develop practical screening techniques.

Recommendation 7. Because nematodes present a threat recognized in at least some of the Regions, ***the Panel recommends*** that CIP make a full assessment of the actual and potential constraint to regional potato production posed by nematodes (PCN and free-living), and plan its research on integrated crop management accordingly.

Recommendation 8. Because water stress is the abiotic factor that presents the most serious and common depressant of yields of potatoes and sweet potatoes, and because the solution to the

problem requires an integrated approach from genotype to landscape, ***the Panel recommends*** that the Integrated Crop Management Division take up the opportunity to investigate options for drought avoidance and tolerance, jointly with other Divisions.

Recommendation 9. Because the Panel analyzed the Terms of Reference of the 2007 NRM CCER, and is of the opinion that they were designed to shed light on CIP's options and means of addressing recommendation # 3 of the Center's 2002 EPMR, and because the Panel studied the report of the review, ***the Panel recommends*** that: (1) CIP implement Recommendations 1 to 6, and Recommendation 8; (2) CIP implement Recommendation 7, with reservations; and (3) CIP not implement Recommendations 9 and 10 of the 2007 NRM CCER, unless these actions are dictated by the priority-setting exercise. (The Panel's reactions to the recommendations of the 2007 NRM CCER are described in detail in Annex 8.)

Recommendation 10. Because the development of greater synergies between CIP's commodity research and its NRM work would be likely to strengthen the overall coherence of CIP's research agenda, and given the need for CIP to improve the focus of its NRM research agenda and to define impact pathways to NRM research outputs, ***the Panel recommends*** that: (1) CIP use the 2007 NRM CCER's analysis and recommendations, and the Panel's reactions to them, as inputs to conduct a sound priority setting exercise, as recommended by the 2002 EPMR; and (2) CIP initiate that exercise without further delay.

Recommendation 11. Because CIP needs to concentrate on fulfilling its mission, by developing disease/pest resistant and more nutritious potato and sweet potato varieties, as well as complementary crop protection and management practices, and because it needs to promote more integration among the Research Divisions responsible for the Center's research outputs, ***the Panel recommends*** that: (1) the Agriculture and Health Division be phased out; more specifically, that agricultural-health interface activities (crop breeding for bio-fortification, reduction of pesticide exposure and the needed trans-disciplinary research to integrate agriculture and health) be carried out through joint research activities and promotion of partnerships (for output mobilization) under the leadership of CIP's other Research Divisions; and (2) CIP agrees the terms of the recommended "phasing out" with all concerned parties, taking into account projects underway and people involved.

Recommendation 12. Because CONDESAN and CIP have no extant, significant and fruitful working relations, in spite of strong previous recommendations on this regard, CONDESAN is no longer contributing to CIP's research outputs. Furthermore, current CONDESAN achievements are due mainly to its own efforts. Therefore, ***the Panel recommends*** that: (1) CIP disengages from convening CONDESAN; (2) the Board of CONDESAN, the Head of the Coordination Unit, and CIP, in coordination with the Alliance, discusses and agree on the exit strategy, and define a working plan for a three-year transition period; and (3) this working plan addresses the financial repercussions for CONDESAN and CIP.

Recommendation 13. Because, since its creation in 1997, the GMP has concentrated on addressing policies, understanding processes, and analyzing technology "offers" from CGIAR for mountain people, the Program makes a negligible contribution to CIP's core research outputs. Therefore, ***the Panel recommends*** that: (1) CIP disengages as the convening Centre for the GM; (2) the Board of the GMP and CIP, in coordination with the Alliance, discuss and agree on an exit strategy and a working plan for a transition period; and (3) this working plan address the financial repercussions for the GMP and CIP.

Recommendation 14. Because the research challenges to improve the livelihood of poor potato and sweet potato farmers are still of great importance for CIP, working to alleviate the poverty of poor urban dwellers distracts CIP's resources away from the rural poor. Furthermore, the Urban Harvest Program is neither complementing CIP's main outputs nor addressing the CGIAR System Priorities, as expected from SWEPs. Therefore, ***the Panel recommends*** that: (1) CIP disengages from being the convening Centre for the Urban Harvest SWEP; (2) CIP set the terms of disengagement in coordination with the Alliance; and that CIP assure donors to this Program that CIP will carry on its responsibilities until the completion of current project activities.

Governance

Recommendation 15. Because the Board has not followed its Statutes regarding length of term limitations for some of its members, and has not been fully effective in its delegation of leadership responsibilities and replacement processes, ***the Panel recommends*** that the Board pay urgent attention to the systematic rotation and replacement of Board positions, and to Board and Committee leadership and succession planning.

Recommendation 16. Because of the shift to smaller governance Boards which need mechanisms to provide oversight to a broad scientific remit, and the need for CCERs as a part of the EPMR process, ***the Panel recommends*** that the Board establish a systematic and comprehensive schedule of programmatic CCERs for the next five-year period, and that funds be budgeted for this purpose.

Management and Finance

Recommendation 17. Because of the inadequacy of CIP's practice of funding capital expenditures only to the level of its annual depreciation cost, ***the Panel recommends*** that: (1) CIP budget annually and explicitly, for Board approval, its capital expenditures, based on the Center's actual needs; and (2) that the Centre allocate the necessary funds to respond to the most urgent needs as identified in its recently prepared capital assessment plan.

Recommendation 18. Because of the need to enable both research and corporate service staff to work efficiently and accurately, **the Panel recommends** that CIP invest, without further delay, in a commercially available ERP suitable to its requirements.

1 UNDERSTANDING AND RATIONALIZING CIP´S MODEL OF INTERVENTION FOR THE PURPOSE OF THE EPMR

1.1 Introduction

Each CGIAR Center's own particularities in terms of its fundamental mandate, available inputs (staff, information, facilities and finance), vision, mission, strategic plan, and governance result in a "unique" model of intervention. The final success of each Center's model of intervention depends on how the Centre delivers outputs (International Public Goods (IPGs) as new technologies, trained manpower and policy recommendations) that are transformed into outcomes (changed farming practices, policies and institutions), and finally into impacts (food security and poverty reduction). Several factors specific to potato and sweet potato, and Andean roots and tubers, contribute significantly to the uniqueness of CIP's model of intervention.

First, the geography of potato and sweet potato production is closely and positively correlated with high poverty areas. Thus, focusing CIP's research on regions with large areas sown to these crops will naturally contribute to improving the livelihood of the poorest. The map in CIP´s Vision Exercise, overlaying hunger, poverty, and child and maternal mortality areas with those of potato and sweet potato production areas, has sharpened Centre targeting to rationalize needed additional investments.

Second, when per-capita incomes rise, per-capita potato and sweet potato consumption tends to decline in favor of other staples. This pattern is evident with sweet potato in much of Asia and Africa, and with potato in the Andes. Therefore, there is growing interest in breeding both crops for new uses and markets in the processed foods and feed sectors.

Third, again due in part to the inverse relationship between consumption and incomes, technology generation and dissemination systems for potato and sweet potato in poor countries tend to be weak or non-existent. A particularly important constraint is the weak seed systems, essential to adoption of new varieties. The importance of functional seed systems is demonstrated by the cases of wheat, maize and rice. In these three crops, relatively effective seed delivery mechanisms facilitated the wide adoption of the seed-based technologies that made the Green Revolution possible. It is no surprise that CIP´s scientists have devoted important efforts to devise ways to strengthen local partnerships with both government and non-government organizations to enable potato and sweet potato technologies to reach poor farmers.

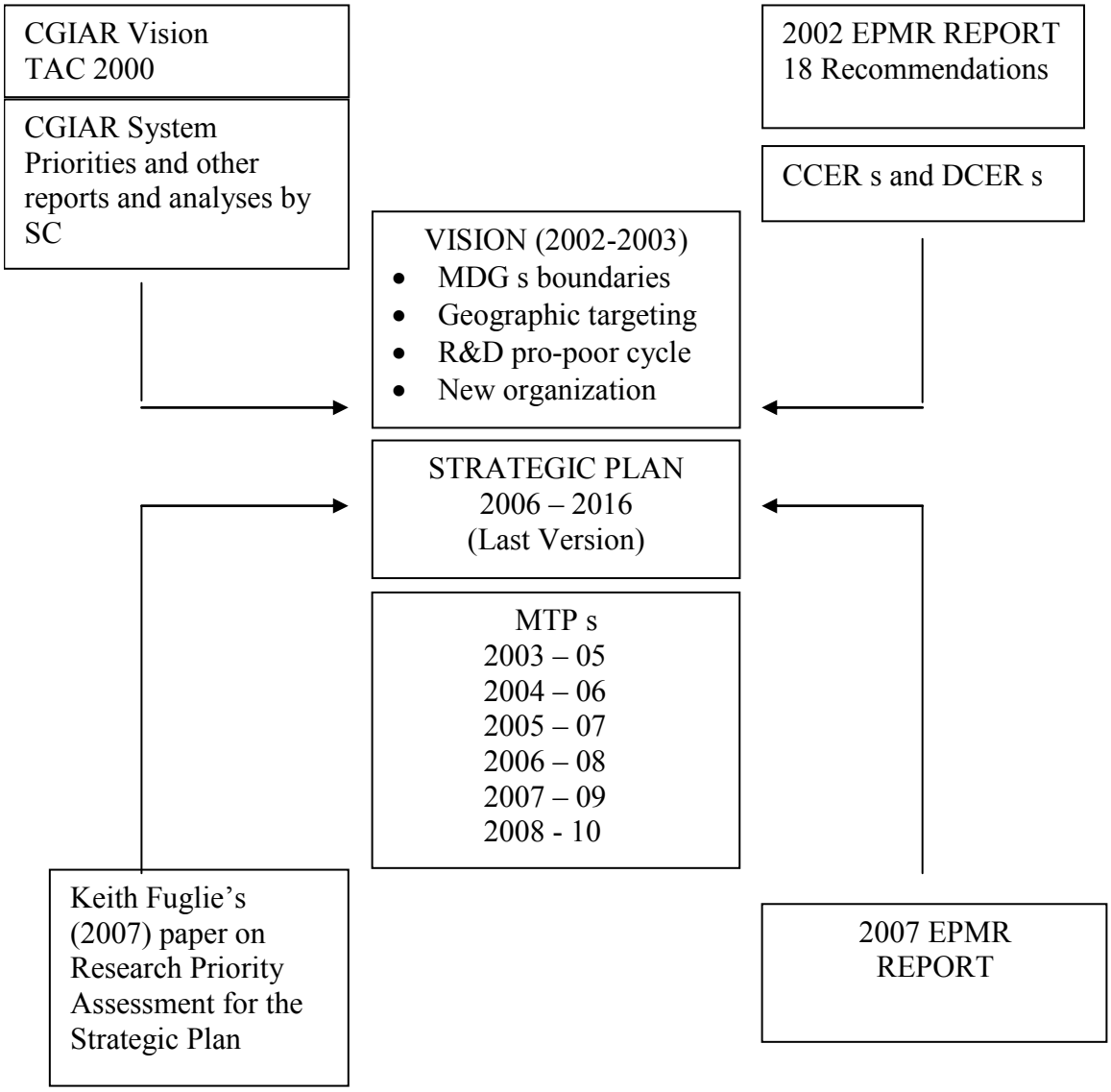
1.2 Centre Performance and Drivers

In order for a Centre to attain the desired outcomes and impacts, it must take care of two fundamental dimensions: First, under the leadership of the Center's Director General, it must produce quality and relevant research, and have good research management (including the quality and quantity of inputs, research processes developed, outputs responding to user needs, and management quality and efficiency); and second, it must have the right policies, vision, mission and strategic directions (aka "governance"), with the apt participation of the Board, charged with the fiduciary responsibility of the Center's work.

As a CGIAR Centre, CIP is autonomous, with its own charter, and an international Board, Director General and staff. CIP ´s Board members are elected from a list of nominees suggested by the CGIAR, the host country, and CIP's own Board. In addition, the Board has the

responsibility to balance the power between those who direct and manage the Centre, and those who invest in it.

Figure 1.1 CIP´s External and Internal Drivers



Source: 6th EPMR Panel, adapted from CIP.

Figure 1.1 shows CIP´s main steps since the 2002 EPMR: A Visioning exercise "Preserving the Core, Stimulating Progress", a strategic planning process, and six Medium Term Plans (MTP s), whose output targets are compared against achieved outputs to monitor the Center's performance. One important result of the Visioning exercise has been that CIP has assessed and realigned its research agenda to meet the Millennium Development Goals (MDGs).

Figure 1.1 also illustrates the plethora of external and internal influences that have driven CIP's programs and priorities in the period being evaluated by the Panel, namely: (1) The diverse groups of CIP stakeholders that participated in the Visioning and Strategic Planning exercises; (2) CGIAR orientations, mainly through the Group's vision/mission planks, and the 20 CG System Priorities; (3) the 18 approved recommendations from the 2002 EPMR that have been gradually implemented through that period; (4) the recommendations from Board and Donor -

commissioned external reviews (Conservation and Characterization of Root and Tuber Crop Genetic Resources (2003, Donor-Commissioned), Papa Andina (2005, Donor-Commissioned), Strategies on Development and Deployment of Genetically Engineered Potatoes and Sweet potatoes (2005, Board-Commissioned), and the Review of the NRM Program of CIP (2007, Board-Commissioned); (5) the internal studies and analyses produced by the Centre for the assessment of certain sections of CIP programs, (e.g. the Report on Research Priority Assessment for the CIP 2005-2015 Strategic Plan); (6) advances in the frontier of scientific knowledge; and (7) CG System partnerships (Challenge Programs, SWEPs, and other collective CG System initiatives), and other associations with regional organizations and consortia.

A final, significant consideration shaping the CIP agenda is its leadership. A new Director General, appointed in 2005, has also influenced CIP's performance during the period under review, although the fourteen years of the previous DG still count a lot.

1.3 CIP's Internal Structure and Organization

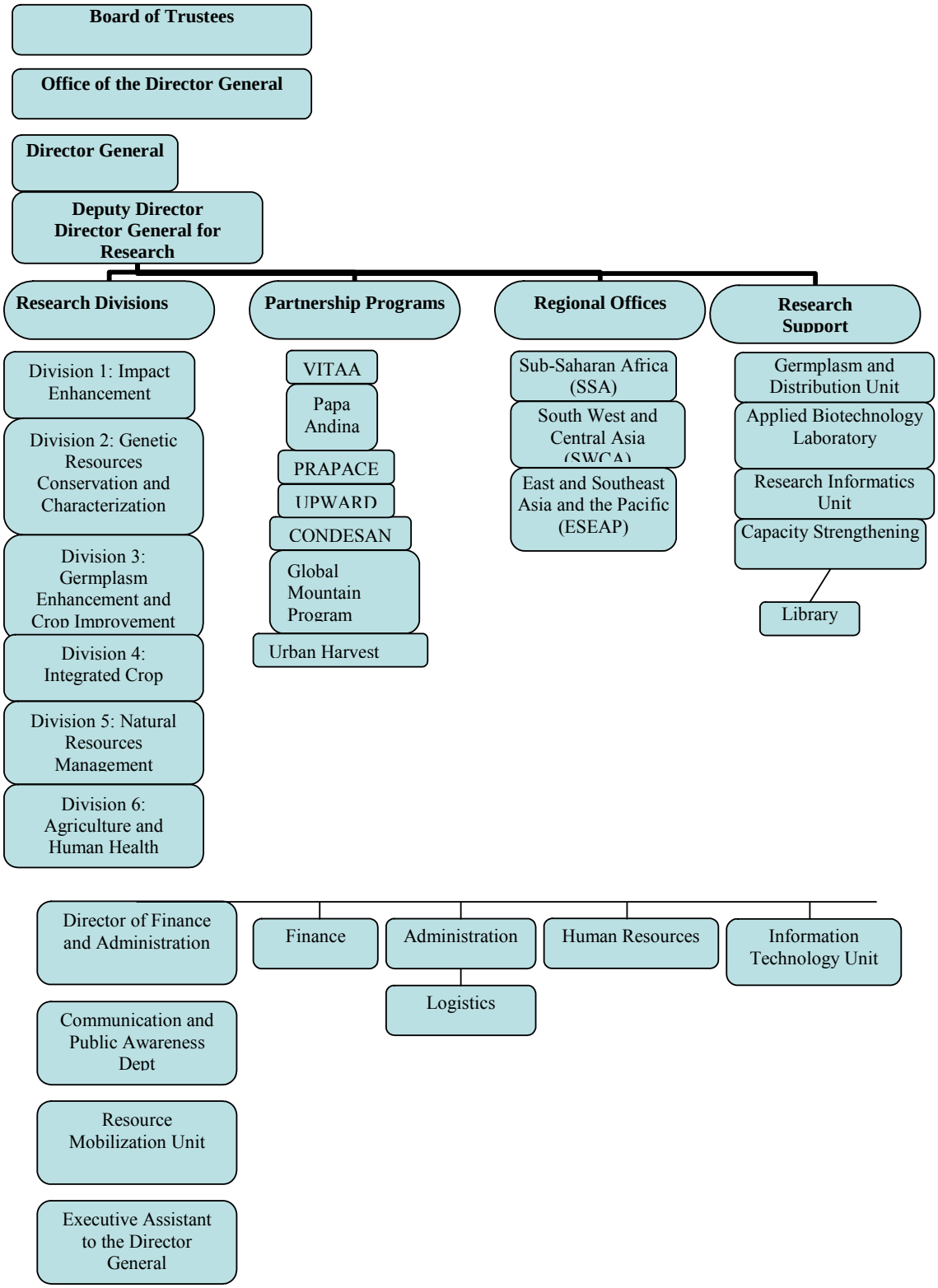
CIP´s different units under the responsibility of the Director General are organized into two major blocs: Research and Finance/Administration. In 2004, in place of its previous "constraint project" model, CIP implemented a new organizational structure, now in operation, consisting of six Research Divisions and seven Partnership Programs. The new structure (as of June 2007) is illustrated in Figure 1.2.

Three Research Divisions -- Genetic Resources Conservation and Characterization, Germplasm Enhancement and Crop Improvement, and Integrated Crop Management -- encompass the Center's main "technology supply chain". Research in these three Divisions is geared to have the greatest impact on poor farmers, making use of the Center's unrivalled genetic resources collection, and moving from genes to products via plant breeding and/or biotechnological routes, complemented by disease free planting material and management strategies for other biotic and abiotic yield constraints. CIP´s true, core identity lies in its technology supply chain, a unique capability giving the Centre a tangible comparative advantage and myriad opportunities to produce IPGs.

According to CIP, the Natural Resource Management (NRM) Division focuses on deciphering and understanding the complexities of the socio-ecological systems in potato/sweet potato areas. It aims to facilitate turning potato and sweet potato systems into resilient agro-ecosystems by introducing new technologies as well as by improving local institutions and policies. Until now this Division has been somewhat biased toward process-oriented and crosscutting issues, though recent indications suggest a better balance between process and applications orientation.

According to CIP, the Impact Enhancement (IE) Division addresses the problem of where and how the Centre should deploy its limited resources to maximize impacts on potential beneficiaries, and to contribute to meeting the MDG targets selected through the Visioning exercise. Keith Fuglie's "Projecting Impacts on Poverty, Employment, Health and Environment" is an important IE ex-ante impact assessment exercise, carried out to contribute the CIP 2005-2015 Strategic Plan, and just published by CIP in 2007. The study assesses the potential contributions of CIP's research outputs to the MDGs, and implications for resource allocation among regions, current research areas and technologies.

Figure 1.2 New Research Divisions and Partnership Programs Structure[3]



Finally, the Agricultural and Human Health (AHH) Division, created as a result of CIP's

[3] Source: CIP

Visioning exercise, seeks to promote the agricultural-health interface through activities such as crop breeding for bio-fortification and pesticide reduction. CIP created the AHH Division based on the premise that some new agricultural technologies and agricultural interventions can both enhance human health and decrease human health risks. Historically, agriculture and human health have been compartmentalized both in research and development efforts. New and appropriate technologies bring opportunities to enhance human health on the one hand, and to minimize the risks to human health of agricultural interventions on the other hand. As the Panel will discuss later in this report, if the premise under which the AHH Division was created is to become a reality a "decompartmentalization" is needed.

1.4 Partnership Programs

Partnership Programs complement CIP Research Divisions with their own regional or global mandates. Whether they are public or private entities, CIP partners have the common purpose of improving agricultural productivity to ensure food security and poverty reduction.

According to CIP, some of its Partnership Programs are meant to be research or output-partnerships that aim to produce research outputs to complement outputs generated by CIP´s Research Divisions. Examples of such Partnership Programs are CONDESAN -- an eco-regional program for the Andes -- the Global Mountain Program, and the Urban Harvest Program, all of which are System Wide Programs sponsored by the CGIAR. However, in reality, as will the Panel will discuss later in this report, the research outputs from these Programs are have little or no relation to CIP´s main technology supply chain.

Historically, CIP has invested heavily in collaborative partnerships with a "research partner for development" perspective, in order to build coalitions and platforms that link scientific research to technology development and to dissemination. In CIP's early years, it stationed a sizeable share of its research staff regionally and in country initiatives. Although the share of staff in regional and country offices is smaller today, CIP has been able to develop partnerships and collaborative projects as pathways to mobilize the Center's IPG outputs into outcomes and impacts. A notable example, applied by CIP in many regions, is the Farmer Fields Schools (FFS) model, an approach to technology diffusion at the farmer level, involving interactive learning and experimentation in farmers' fields, which has made farmers less dependent on traditional extension services, often weak or non-existent in many countries.

Local capacities for technology adaptation and dissemination are variable among the countries and regions where CIP has established its programs, from China to SSA. Developing partnerships with targeted constituencies to ensure that CIP ´s research outputs finally find their way to farmer fields (outcomes) is a challenge involving more than the design of good partnership projects. The challenge lies also in finding investors/donors willing to reach a compromise between their own goals focused on development activities to attain impact, and those of the Centre, which should focus on producing research outputs of an IPG nature and to design partnerships to help transform those outputs into outcomes. Indeed, most of CIP´s impact success stories have required significant funds for scaling-up technology dissemination, usually in the form of special donor projects to disseminate a particular technology in a country or region.

CIP ´s IPG outputs can be thought of as "intermediate goods" that require various degrees of development, adaptation, validation and, finally, dissemination before they become "final

goods", ready to be adopted by farmers, and eventually attain wide-scale adoption and have tangible, sustainable impacts on the welfare of the poor. Furthermore, not every output links forward immediately to outcomes. Some outputs cycle back into CIP´s technology supply chain to produce new outputs. For example, the main users of outputs from the Genetic Resource Conservation and Utilization Division are scientists in the Genetic Enhancement and Crop Improvement Division. The more "global" outputs of CIP's research are intermediate research outputs produced at CIP´s headquarters, while CIP's regions do the bulk of adaptation and validation to produce final outputs.

1.5 Attribution

As a Centre moves from producing IPG outputs, to producing outcomes (changes in behavior such as adoption of a new technology), and finally to impacts (changes in the state variables such as those built in the MDGs), the problem of attribution shows up.

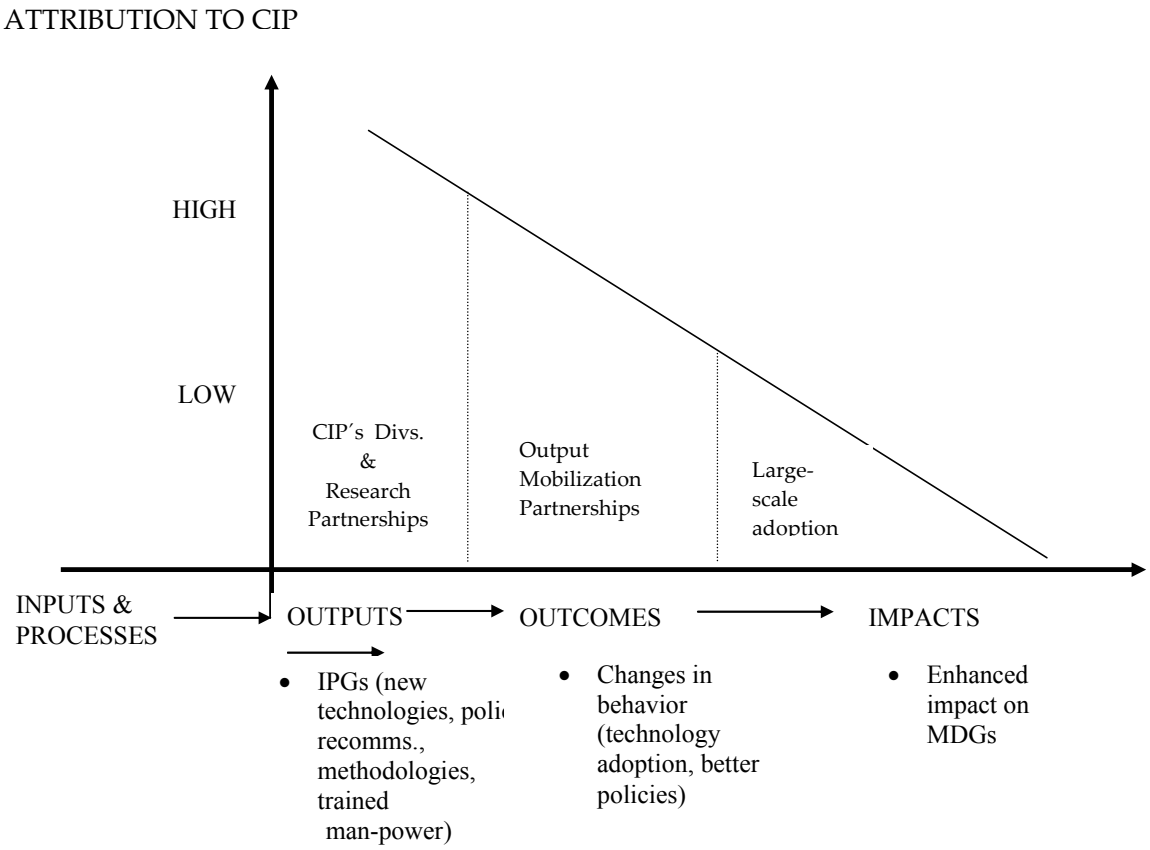
Figure 1.3 illustrates that problem. The process can be seen as one of diminishing control by the Centre, as local ownership, number of actors, and number of exogenous factors (e.g. culture, markets, policy, weather, wars) become preponderant as one moves to the right, along the horizontal axis, from outputs, to outcomes to impact. CIP can take credit, claim attribution, and be made accountable for the "output step" of the process, and even at this "output step", credit, attribution and accountability are limited, since the Centre borrows from and contributes to a global pool of knowledge. As CIP's activities move from outputs to outcomes to impact, attribution to CIP and accountability from CIP diminishes.

Inevitably, attribution becomes a problem when, in measuring Centre performance, development and donor organizations focus on impact indicators. CIP has little control over the changes in behavior in the Centre ´s clients, associated with outcomes, and even less control over impacts.

A clear concert for CIP is that, unless it attains outcomes, its outputs will be useless. For this reason, developing and strengthening partnerships with the groups and organizations with which CIP anticipates opportunities for influencing changes in behavior (adoption of new technologies and farming practices, new policies and stronger institutions for example), is the only avenue open to the Centre to exercise such an influence. These partners are defined as "boundary partners" (in the IDRC jargon) and refer to those who control change and with whom the Centre-sponsored partnership programs interact directly. A careful selection and cultivation of these boundary partners constitutes a strategic step for CIP as an ex-ante activity to ensure the successful mobilization of Centre outputs. Depending on the nature of the output (technology, policy, institutional), each output or set of outputs will require specific partners, (government and non-government organizations) in each region or country.

Therefore, an important question here is whether CIP has in place the right set of partnership programs, for both the effective production of outputs, and the effective mobilization of outputs into outcomes. Firstly, it is desirable that research outputs produced by CIP's partnership programs are in fact complementary to CIP, which is, closely related to the Center's main comparative advantages. Otherwise, such program will only divert the Centre from its core business. Secondly, it is important that CIP's regional and country programs working in the research for development interface (i.e. on efforts geared to achieving outcomes) pick the right partners for effective output mobilization.

Figure 1.3 Dimensions of CIP Performance Addressed by the Panel, and the Problem of Attribution



1.6 CIP´s Regional Offices

An additional consideration regards CIP's work in the Regions, where most of the output mobilization work is done, including the implementation of the "research for development approach" work of the country and regional Partnership Programs. As the Panel discusses later in this report, CIP's Regional Offices (see Figure 1.2) – of which LAC has none -- are just that, and not true Regional Programs. No place for the Regions is contemplated in the structure of CIP's research Divisions and Partnerships Programs. Although since 2006 CIP's country development projects report directly to their appropriated regional leader, the Panel strongly questions whether this organizational structure with Regional Offices is the best for CIP´s research and output mobilization work.

The regions that CIP has defined are: Latin America and the Caribbean, Sub-Saharan Africa, South, West and Central Asia, and East and Southeast Asia and the Pacific. Currently, the Centre is in the process of developing an ambitious program with China that will help to create partnerships among the host country, CIP and third countries in different regions. (See Annex 9)

Normally a common set of research themes is pursued in each region. However, each region has different requirements and priorities that are laid out in a series of regional strategies. For example, combating late blight through resistance breeding and integrated management is a common activity across regions, but in Latin America and the Caribbean, the focus is on improving nutrition of Andean inhabitants and conserving the rich agro-biodiversity in native potatoes. The strategy for Sub-Saharan Africa takes into account the needs of two broad regional

groups: eastern and southern Africa and West Africa. Specific activities include for example cost-effective strategies for scaling-out orange-fleshed to combat vitamin A deficiency and improve diet quality. The strategy for South, West and Central Asia include sustainable production in the small hillside farms and innovative technology in multiple cropping systems, while in East, Southeast Asia and the Pacific emphasis is on simple and affordable ways to extend the storage life of sweet potato.

1.7 EPMR Road Map

The EPMR has followed the steps outlined above in an attempt to analyze the Center's program and management. And based on the Panel's individual and collective judgment plus the information obtained through the different readings, presentations and interviews from and with scientists and field trips, has produced a set of suggestions and recommendations aimed at improving the effectiveness and efficiency of the CIP´s model of intervention towards the future.

2 CIP'S VISION EXERCISE AND STRATEGIC PLAN

2.1 Introduction

International Research Centres generally take long-term perspectives in research. A well-articulated Vision is critical to decision making guidelines, and to avoid compromising long-term strategic goals and opportunities.

The 2002 EPMR made two recommendations in this regard, namely that CIP develop a Vision and Strategic Plan, and that CIP connect Vision and Plan, establishing a robust set of priorities for the future. CIP reports that it has implemented both recommendations.

In June 2002, with the endorsement of the Board, CIP's DG decided to carry out a Centre Vision Exercise, in order to produce a roadmap of CIP's "development challenges". According to CIP, the Vision, which would be the basis for CIP´s Strategic Plan, would pinpoint:

- where CIP research has most potential to impact development;
- what specific research needs and opportunities exist in CIP target areas and respective populations; and
- How CIP's research should be performed.

As next steps, the Panel expected CIP to carry out the following actions: (1) that based on the Strategic Plan, a Corporate Plan would be developed to realign financial, human and economic resources across CIP research units and target regions; and (2) that the priorities defined in the Strategic Plan would first be expanded into Business Plans (specifically addressing how a particular goal is to be achieved, for example, on the issue of critical mass), then into Operational Plans (the MTPs), and finally into resource mobilization toward achieving CIP's Vision.

The logic of this rather long process (the Vision in 2002-2003 and the Strategic Plan in 2006-2016, the final version of which has not been completed) is supposedly a progressive one, running from vision-goals-mission to priorities, then to tactics and activities designed to achieve the goals, then to resource allocation, and finally to the evaluation of outputs.

2.2 CIP's New Vision

Changing Boundaries from Commodities to MDGs

The process of shaping the new CIP Vision was well conceived and highly inclusive, with the participation of diverse groups of Centre stakeholders. A comprehensive questionnaire was sent to the Plenary Members probing two specific issues:

- MDGs as the boundaries for the CIP Vision Exercise; and
- CIP research impact potential in the eighteen identified MDG target areas.

Of the 158 respondents, 89% agreed to the first inquiry. Thus the MDGs were adopted as the boundaries of CIP's visioning exercise. The results of the second inquiry are shown in Table 2.1, below.

The first comment of the Panel regarding this first part of the visioning exercise relates to the scope of the MDGs. Clearly, many of the targets associated with the MDGs are totally outside CIP's mandate as an agricultural research organization. This suggests that CIP´s research potential and comparative advantage to produce and deliver the specific IPGs implied by many

Table 2.1 MDGs and CIP Vision First Plenary Consultation Results (Total Responses= 158)

No.	MDG target areas	Yes (#)	Yes (%)	No (#)	No (%)	No Response
2	Hunger	151	96	5	3	2
1	Poverty	147	93	10	6	1
9	Sustainable environment	145	92	12	8	1
18	Available new information & communication technologies	134	85	24	15	0
5	Under-5 mortality	119	75	39	25	0
13	Needs of least developed countries	110	70	43	27	5
11	Slum dwellers	105	66	53	34	0
6	Maternal mortality	83	53	75	47	0
10	Safe drinking water	76	48	82	52	0
16	Productive work for youth	73	46	83	53	2
14	Landlocked countries and small island	62	39	90	57	6
3	Primary schooling	52	33	106	67	0
4	Gender disparity in primary schooling	50	32	108	68	0
8	Malaria and other diseases	45	28	113	72	0
17	Affordable drugs	41	26	116	73	1
7	Spread of HIV/AIDS	33	21	122	77	3
12	Non-discriminatory trade	33	21	125	79	0
15	Debt problems	23	15	134	45	1

Source: CIP

of the MDG targets areas did not receive appropriate attention in the visioning exercise. It certainly would have been more appropriate to define the most relevant MDGs for the Centre before asking stakeholders about CIP's potential contribution. This would have prevented results such as the one on "safe drinking water", a doubtful goal for an agricultural research organization such as CIP, but a target area where 48% of respondents considered that CIP research could contribute to impact.

This Panel's second comment pertains to CIP's choice of a simple majority (more than 50%) as criteria to select CIP's Vision challenges. The Panel considers that a higher cut-off, for example 70-75%, would have been more appropriate, directing CIP's efforts to challenges with the greatest support among Centre stakeholders. For example by selecting a 75% majority, the four basic goals to which agricultural research has proven to contribute significantly are related to combating hunger (96% vote), poverty (93% vote), sustainable environment (92% vote), and under-5 mortality (75% vote), would have been selected as the core challenges in CIP's Vision Exercise. Furthermore, because MDG targets are highly correlated, the same research outputs

that impact these four MDGs are indirect fixes (technological solutions) for other related developmental issues. For example, it is well known that poor urban consumers, which include slum dwellers (goal #11), have been the main beneficiaries of price drops derived from higher agricultural productivity because they spent a relatively large share of their income on food.

This Panel's third comment relates to the inclusion of Target 18— to improve access to new Knowledge and Technologies —as a Vision challenge. The problem here is that making communication and dissemination technologies available to less developed countries constitutes a basic instrument for CIP, and all CGIAR Centres for that matter, if they are to achieve effective output mobilization for the poor. In other words, even if Target 18 had received little or no support from survey respondents, CIP had no alternative but to include it as a goal. Therefore, in the Panel's opinion, Target 18, being a required means to achieve all ends, seems inappropriate as a Vision challenge.

Challenge teams and task forces were created around the 8 Vision Challenges selected, in order to develop individual Challenge Essays. These Essays focused on specific CIP program objectives and their implications for the CIP Vision. Outside experts were invited to present their views about the role of agricultural research vis-à-vis the 8 selected MDG target areas. In addition, Plenary Members and independent resource persons were consulted.

On March 2003, a draft Vision was presented to CIP's Board for review, and management was encouraged to proceed. The Vision Document was submitted as a final report to the CIP Vision Plenary, with the following vision statement:

> "The International Potato Centre (CIP) will contribute to reducing poverty and hunger; improving human health; developing resilient, sustainable rural and urban livelihood systems; and improving access to the benefits of new and appropriate knowledge and technologies. CIP will address these challenges by convening and conducting research and supporting partnerships on root and tuber crops and on natural resources management in mountain systems and other less-favored areas where CIP can contribute to the achievement of healthy and sustainable human development."

The previous CIP Vision Statement was closely aligned with that of the CGIAR, stressing the Institute's character as an agricultural research Centre dedicated to:

i. helping the poor;
ii. the achievement of food security and its focus in scientific research on mandated crops as the Mission boundaries; and
iii. NRM in the Andean and other mountain areas.

Although this focus remains unchanged, CIP's new vision statement based on its contributions to the 8 selected MDG target areas, expanded considerably on the previous one, adding three new dimensions:

i. improving human health;
ii. developing resilient, sustainable, rural and urban livelihood systems; and
iii. Improving access to appropriate new knowledge and technologies.

This Panel has questions about what were the real forces that drove CIP to expand its boundaries into such new targets and directions, and about the implications of this expansion of boundaries

for the quality and relevance of the Center's core areas of research. Following are further considerations in this respect:

CIP scientists anticipate that the Center's potato and sweet potato research will deliver significant economic, employment, health and other benefits over the coming decades, and because these crops are important for the poor, particularly in rural areas, a large share of the anticipated benefits will go directly to poverty reduction.

However, CIP's claimed contribution to "sustainable rural and urban livelihood systems" is far more difficult to achieve. The Sustainable Livelihood (SL) approach (as articulated by the UK's DFID) which is generally considered a better alternative than the Integrated Rural Development of the 70´s (popularized by the World Bank) is "centered on people's assets, their ability to withstand shocks and the policies and priorities reflecting the needs of the poor." SL principles state that poverty-focused development activity should aim to be holistic, though holistic analysis and planning need not necessarily result in holistic interventions.

CIP research outputs do not operate in a vacuum. If disseminated, research outputs integrate into farming systems, which in turn are part of livelihood systems. While research outputs can add to the IPG pool, farming and livelihood systems are always local, highly specific arrangements, and their success is subject to a great number of conditions over which CIP and its partners have little or no control (see discussion on the problem attribution in Chapter 1). Extending CIP's research to urban livelihood systems is likely to complicate that panorama even further.

CIP's claimed contribution to human health is seen as a natural extension to the goal of nutrition improvement through foods fortified with vitamins and minerals. By facilitating breeding for specific traits to improve human health, as in the case of golden rice, biotechnology has opened up new frontiers. The case of the orange-fleshed sweet potato that CIP is promoting in SSA through the VITAA program is a key example of CIP's work in this area. The field of "nutraceuticals" suggests the importance of this CIP-claimed contribution.

CIP work on reduction of pesticide use over the past years has contributed reductions in pesticide, and therefore to improvements in human health. There is no doubt that CIP´s integrated crop management (ICM) and breeding research, looking at all ramifications of any new chemical related to potato and sweet potato production is the appropriate way to go. However, the Panel questions whether CIP's comparative advantage lies in the area of pesticide use *vis-à-vis* human health generally, and is of the opinion that all health issues relevant for the poor which cannot be tackled through better potato and sweet potato technologies should not attract CIP´s resources. Otherwise, CIP's resources could be "diluted to infinity". (Further discussion about this issue is provided in the analysis of the Agriculture and Health Division in Chapter III).

The Panel's basic concern is to what extent CIP's work on the new targets related to human health and urban dwellers might dilute the human and scientific assets responsible for CIP's long achievement record. Management has stressed very clearly that CIP must preserve and consolidate activities for which the Centre has achieved world renown. However, the new Vision calls for CIP to ensure that its outputs improve the livelihoods of the poor by contributing to the eight identified MDG target areas. This implies that CIP move beyond the commodity boundaries that have characterized its work in the last ten years.

Thus, the Panel asks what forces are driving CIP into new directions. This Panel can think of four grounds most likely to prompt pursuit of new opportunities:

i. That the prospects for additional gains in CIP′s traditional core are declining. But Fuglie's (2007) 1996-2006 ex-ante comparison of expected benefits across major CIP research programs does not seem to indicate such a decline; to the contrary, some are rising due to new CIP target regions and countries.
ii. That alternative businesses promise larger benefits than the original core ones. But the Panel sees no evidence of this, and, in any case CIP would need to show evidence of greener pastures in the new roads.
iii. That the donor community is reducing support to CIP′s core activities due to "donor fatigue" or other reasons, such as fluctuating donor interests. This Panel suspects that CIP may be suffering from this to some extent.
iv. That alternative source of supply of CIP's core work have appeared, from the public or private sectors, or that CIP has lost its comparative advantage in some of its core areas of endeavor. In the Panel's opinion, CIP may have some specific research endeavors where stronger NARS or the private sector could perform more efficient work.

With the intention of providing a retrospective dimension to its review, the Panel interviewed Dr. D. L. Sawyer, CIP's founding Director General Emeritus. Dr. Sawyer's historical highlights as well as his views on the Center's most important changes and challenges helped the Panel understand CIP and its circumstances better. Dr. Sawyer's insights were particularly helpful to the Panel while analyzing CIP′s Vision and Strategic Plan. (See Annex 10 for the complete interview.)

Other Relevant Themes of the Visioning Exercise

An interesting feature of the Vision Exercise is the introduction of the "pro-poor R and D cycle" as a planning tool to alter CIP's research portfolio.

As Figure 2.1 illustrates, the Cycle moves from the macro-scale (targeting the most promising geographic areas for pro-poor impacts) to the meso-scale (research and opportunities within the macro areas), and then to the micro-scale (prioritizing specific R and D interventions). Each step within the Cycle introduces methods sensitive to the goal of alleviating poverty.

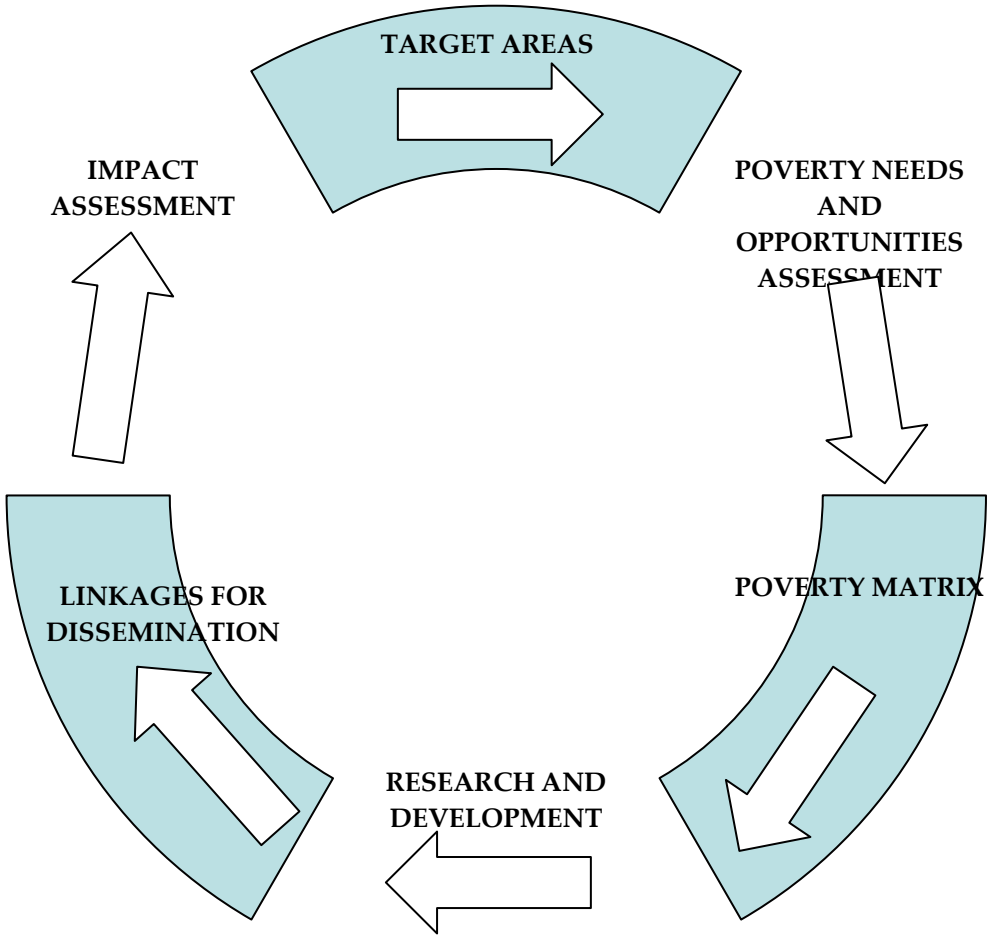
Based on this tool, the Vision Exercise involved two first steps toward developing a Strategy:

i. A geographic targeting exercise identified eight regional groups in 36 countries that ranked high in production of potatoes or sweet potatoes, and in the prevalence of poverty; and
ii. A new organizational structure based on Research Divisions and Partnership Programs was set up.

The Panel would like to commend CIP for the quality and relevance of the new geographic targeting. CIP has long felt that CGIAR investment in roots and tubers based on value of production and a poverty–weighted congruence analysis tends to underestimate the contributions of those crops to poverty and hunger alleviation. The new mapping exercise -- based on overlaying hunger, poverty and child and maternal mortality data with potato/sweet potato production areas -- is a major step toward justifying additional investment and improving targeting.

This Panel would like to note that a major conclusion of CIP's geographic targeting exercise was that adding livelihood targets does not significantly alter "highest priority" geographic targets for CIP commodity research. Countries with high rates of malnutrition and mother and child mortality also have the highest levels of income poverty. This is usually the case with hierarchical goals, where targets can be nested into others higher-up the ladder. In this case, high rates of malnutrition and mother and child mortality can be nested into income poverty.

Figure 2.1 The Pro-Poor Research and Development Cycle



Source: CIP

The second step taken by CIP toward developing a strategy was to realign its research programs into a new structure consisting of six Research Divisions and eight Partnership Programs (See Chapter 1 on CIP's Model of Intervention). According to CIP, "the revised structure should achieve a more streamlined research management and be robust enough to persevere and maintain its relevance in the face of a dynamic external environment".

The new structure, which became operational in 2004, substituted the "constraint project" model that CIP had applied for many years. It contemplates a Genetic Enhancement and Crop Improvement Division, which puts CIP's breeding efforts for all commodities under a single leadership, as recommended by the 2002 EPMR.

The only Division that houses projects previously considered "orphan" seems to be Agricultural and Human Health, which houses CIP's claimed contribution to human health according to the new Vision. Currently focused on pesticide risk reduction in Andean communities, the Science Council has noted that this area of work is relatively absent of IPGs, and has questioned whether CIP has a comparative advantage in this kind of research. This Panel agrees with the Science Council's comments in this respect.

It is important to point out that, in spite of the reorganization of CIP's research programs, the new Research Divisions retain the same budget imbalances reflected in the previous "constraint project" model. For example, while under the former "constraint project" structure, three out of eleven projects accounted for almost 50% of the CIP 2001 budget, today two out of six Divisions (Genetic Enhancement and Crop Improvement, and Integrated Crop Management) accounted for 55% of CIP's 2005 budget. Although it may be absolutely justifiable for breeding and agronomy research to account for nearly two thirds of CIP´s budget, the Panel sees the imbalance in resource allocation among the Research Divisions as a potential managerial problem. For example, the role of Division leaders is likely to vary significantly across Research Divisions.

The rationale of the new structure is clear in terms of supply and demand, both propelling Division research and driving Division/Partnership interaction. CIP Divisions supply OUTPUTS, to be locally adapted and disseminated for up-take and utilization, while Partners´ demand for specific OUTPUTS result in contract research.

Besides creating the research Divisions, the new structure provides an identifiable space for partners, something welcomed by the Panel. The Regions are, however, the big absents in the new structure. It is certainly not clear to the Panel where and how CIP's Regions fit in the new structure.

2.3 An Alternative Program Structure for CIP

In the past CIP had Outreach Programs, with CIP scientists stationed regionally to collaborate with NARS, to train NARS personnel, and to adapt and promote the dissemination and utilization of new CIP technologies. CIP abandoned this structure, apparently due to the tendency of Outreach Programs to become independent of the Center's research "thrusts"/ projects/Divisions. Today, CIP has replaced its Outreach Programs by Regional Offices, at least in three of the four regions, which operate in unified manner, around the six Research Divisions.

The Panel sees two problems with this new arrangement. First, the Regions have lost stimulus to pursue their research work, and have developed a greater dependence on Lima, both technically and bureaucratically. Second, Research Divisions today house (and sometimes even coordinate) regional and country program partnerships oriented toward output mobilization. For example, the MTP shows that Papa Andina and UPWARD operate under the Impact Enhancement Division, and VITAA operates under the Germplasm Enhancement and Crop Improvement Division. CIP's management has reminded the Panel that "it is important to distinguish between MTP reporting and the actual functioning of Research Divisions and Partnership Programs". In

the opinion of the Panel, on the one hand, there should be coherence between "functioning and reporting", precisely to avoid confusion to a casual CIP's stakeholder reader of the MTP. And on the other hand, actual functioning could be improved by clarifying the procedures through which Partners' demand specific outputs in contract research.

Most of the work related to development (technology adaptation and dissemination) is carried out in the Regions. And while some cases may justify that a researcher from a Research Division in Lima coordinate a project with R and D components, the Panel considers that in most cases Regional Leaders should coordinate regional and country projects in their respective domains, while using research outputs from Research Divisions in Lima as inputs.

A related problem lies perhaps in the Center's funding structure, where on the one hand restricted funds are significant, and on the other CGIAR guidelines require CIP to report its research projects in the MTPs in a certain way. For example, in the year 2006 contracts were signed for approximately US$ 11M, 50% for research and 50% "development type" activities. Some of the funds reported in the MTPs for development-type activities are just pass-through moneys, or resources linked to country-specific broader development activities, but allowed CIP to charge for over-head and some recovery of personnel costs.

CIP´s dilemma here is quite clear. Either, the Centre goes beyond the 20% limit for off-CGIAR Agenda activities or it reports development-type contracts as activities within its Research Divisions and/or the SWEPs. Since the latter is the Center's chosen reporting modality, Research Division budgets are artificially inflated as a result, and some planned outputs have only local relevance, and therefore are not IPGs. For the first time CIP, in its most recent MTP (2008-2010), reports development activities within the Research Divisions - reported as Projects in the MTP - making reporting more transparent.

This picture becomes clearer by looking at Table 1 of CIP´s 2007-2009 MTP which describes CIP's allocation of project costs to CGIAR System Priorities (See Annex 11). The table shows how all projects allocate considerable resources to System Priority Area 5 *Improving Policies and Facilitating Institutional Innovation to Support Sustainable Reduction of Poverty and Hunger* (CG System Priority 5) In fact, 37% CIP´s total budget is allocated to this System Priority (See Table 4.1 in Chapter 4). One might initially suspect that such concentration of resources on CG System Priority 5 reflects CIP's need to concentrate research on non-technical constraints in order to ensure proper dissemination and adoption of technological fixes. But on a closer look, this does not seem to be the case. The reality that the Panel perceives is that CIP has reported development activities as research OUTPUTS, linked to CG System Priority 5.

While this report argues that CIP needs to work on the promotion of OUTCOMES, at least in some countries with weaker NARS, and while it is clear for the Panel that without OUTCOMES the work of CIP is futile, the Panel is of the opinion that this is a situation that needs clarification and more transparency.

The geography of potato/sweet potato production areas correlates closely with high poverty areas in poor countries, or with important "poverty pockets", including countries like China. China has a strong NARS, in contrast with NARS in poor countries, which tend to be weak or non-existent. Potato seed production systems are also weak in most poor countries. Thus, CIP has the additional task of strengthening local partnerships with government and non-government

organizations, both to adapt technologies in collaboration with local researchers and to disseminate them among poor farmers.

But, notwithstanding this reality, CIP should introduce more transparency in budget reporting. This Panel suggests that CIP should start this by clarifying its agenda, by putting aside (not reporting) all restricted projects funds not directly related to CIP's research OUTPUTS or their deployment (OUTCOME partnerships). This may mean, for example, that restricted projects involving pass-through moneys will not be reported in the Center's MTP. Secondly, in case this is still needed, CIP should look for flexibility in the current 20% limit for off-agenda activities that the CGIAR has established across the board.

In addition, ***the Panel recommends*** two additional changes in CIP's program structure. First, that CIP create a new Division on Partnership and Research on Partnerships, with the double mission of: (i) to assist in the development of regional and country program partnerships - for OUTPUT mobilization - in close association with CIP's Regions, and (ii) to carry out research linked to System Priority 5C: Rural Institutions and their Governance, whose general goal is "to enhance the role that rural organizations and innovative institutional partnerships play in maximizing impact from agricultural research and in creating marketing platforms for smallholder producers".

Restricted project resources aimed at OUTPUT mobilization would be budgeted under this new Division. This Division would report its research OUTPUTS in the MTP. The budget for such research could come from a percentage of the "budget for research" that is usually included in the development-type restricted projects. Figure 2.2 illustrates the Panel's proposed program structure.

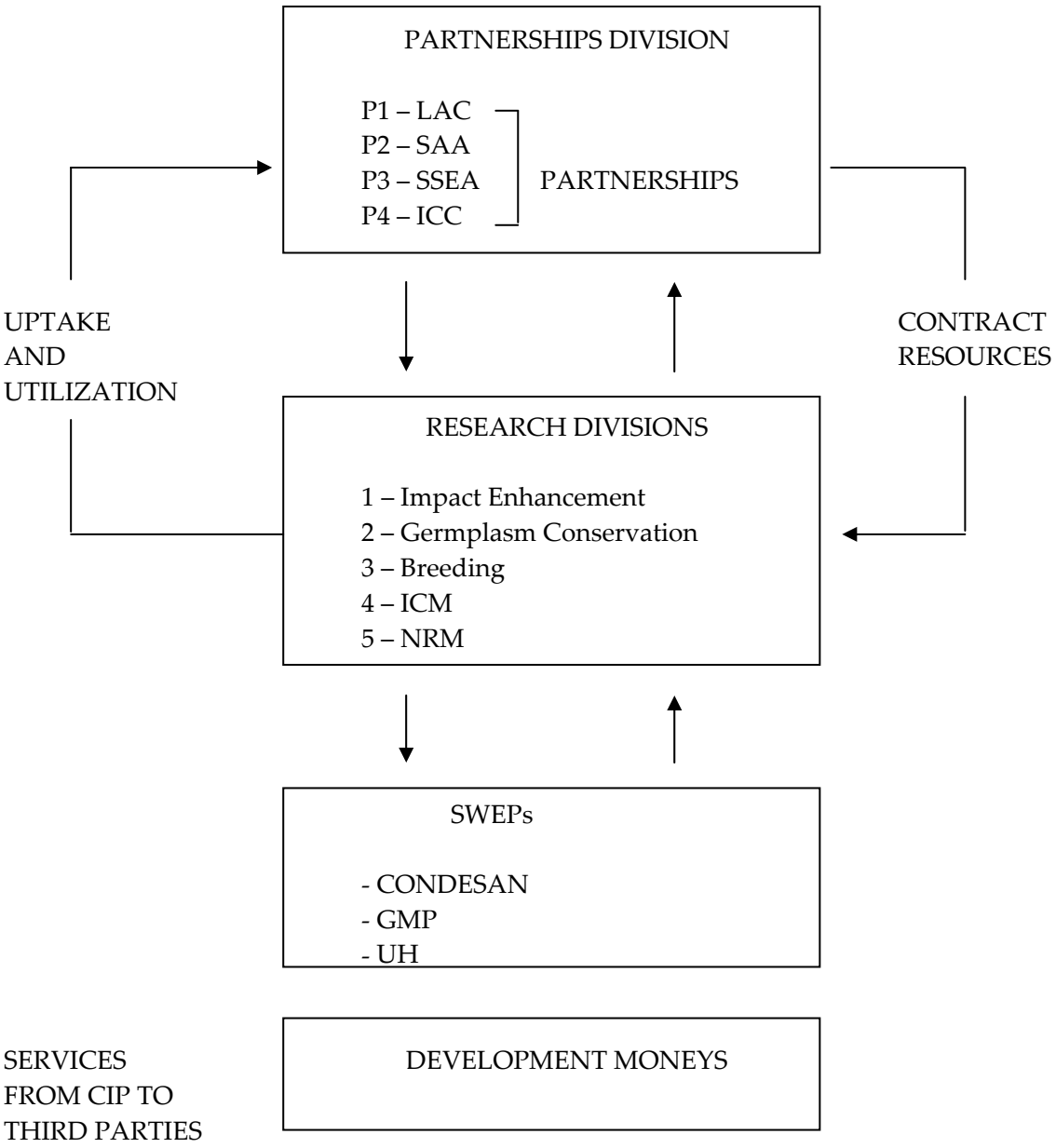
Recommendation #1

Because of the need to improve the effectiveness, transparency and visibility of the CIP program structure components, ***the Panel recommends*** that the current organizational structure be modified to include:

i. A Division on Partnership and Research on Partnerships, with the double mission of: (1) assisting CIP in the development of regional and country program partnerships specifically oriented to the mobilization of the Center's main OUTPUTS; and (2) conducting research of an international-public-goods nature in the field of CGIAR System Priority 5C, Rural Institutions and their Governance, whose goal is: "To enhance the role that rural organizations and innovative institutional partnerships play in maximizing impact from agricultural research and in creating marketing platforms for smallholder producers." The additional work needed to complete the implementation of the 2002 EPMR recommendation regarding the need to formulate a strategy for engaging in different types of partnerships (See Chapter IV, Crosscutting Issues), should be developed under this new Division.

ii. An identifiable space for CIP's Regions as Regional Programs - with true Regional Directors: (1) to design and implement regional and country partnerships, joint research activities in association with the Research Divisions, training programs and events; and (2) to realize the potential research spillovers among countries within and across Regions.

Figure 2.2 An Alternative Program Structure for CIP



2.4 CIP's Strategic Plan 2006-2016

The Plan's Particular Features

In 2005, CIP began to prepare a new Strategic Plan to guide the implementation of its Vision. This Panel reviewed the Plan, based on the following premises:

- Strategic planning is the process of defining a long-term action plan designed to achieve a strategic set of goals, in the light of an uncertain external environment.
- A Strategic Plan is a method of getting from one set of circumstances to another.
- A Goal is the desired outcome.

The first paragraph of CIP's Strategic Plan Executive Summary, reads as follows: "The strategy of the International Potato Centre (CIP) sets out a program of research for the next 10 years that is aimed squarely at contributing to the achievement of selected targets of the Millennium Development Goals".

The selected MDG targets are intended to guide CIP programs, ensuring that research outputs translate into improving the livelihoods of the poor (outcomes); thereby contributing to identified MDG targets (impact). CIP asserts that some of the selected MDG targets have a place in the Center's program agenda, in regard to some specific needs of the poor such as:

- Strengthening competence to empower local decision-making in innovation;
- a healthy diet for the family; and
- Secure and safe crop production for urban and suburban areas.

This Panel first notes the absence of any reference to the CGIAR System Priorities (SPs) in CIP's Strategic Plan. While the Panel concurs that CIP's agenda should not be limited to the CG System Priority s, CIP is expected to focus its work significantly on SPs, and this should be reflected in CIP's MTPs. Since a Strategic Plan should inspire CIP's MTPs, it is only logical that SPs constitute a key element in the Plan. This omission may cause setbacks in the planning process. For example, the Science Council does not recognize the Urban Harvest SWEP as aligned with SPs, and recommends that the program be funded by the Center's 20% budget allocation reserved for CIP's own research priorities. Furthermore, in reviewing CIP's 2006-08 and 2007-09 MTPs, the Science Council deemed inadequate CIP's progress in SP alignment.

The Panel commends CIP for the Plan's declaration that the Centre is a "research partner for development". According to CIP, CGIAR stakeholders have differing opinions about the role that CIP, and CGIAR Centres in general, should play in global agricultural innovation. These opinions can be summarized in the following two:

- The first views CIP as a provider of basic research of an IPG nature. This was a key criterion in defining the CGIAR System Priorities.
- The second views CIP as a partner in research for development, accompanying relevant stakeholders to ensure that research gets translated into outcomes and, in some cases, through to impact.

CIP's Strategic Plan aims to show that both views are vital, and indeed complementary, and the Panel agrees entirely with this position. The second view cannot be justified without the other. The rationale for the role that CIP has chosen, the two legs strategy, is based on an expanded interpretation of agricultural research as a "policy instrument", which covers three complementary dimensions:

i. Research capacity to generate technological fixes (TFs);
ii. coalitions and platforms to link scientific research to technology development and dissemination (CIP as a research partner for development); and
iii. Upstream and downstream linkages with policy makers and development partners, supported by lobbying and advocacy.

The problem perhaps is in the numbers. How funds, resources, and staff time should be shared among these three complementary dimensions. This Panel believes strongly that PRIMACY should be given to the first dimension, but current funding prospects seem to indicate that this, in fact, is not happening.

CIP's Technological Fixes (TFs)

TFs are the new knowledge and technologies that CIP produces to address major, specific constraints to productivity, typically faced by farmers in the developing world. They are "intermediate goods" in the technology supply chain because they require adjustment to fit particular farming systems. Indeed, it is their "intermediate good" attribute that in turn confers them their IPG nature.

The Plan, presented as the roadmap to CIP strategy, first describes the Center's core business as residing in four areas of global science: germplasm conservation, genetic improvement, crop protection and NRM management research. Each occupies one Division within the new organizational structure, and each is a research project in the MTP structure. A fifth area, Innovations Systems, is described as a CIP approach designed to demonstrate that a global Centre can deliberately affect impact locally, delivering tested models with potential international relevance.

The Strategic Plan includes reports about CIP's five areas of research. Each area follows a standard outline: global context, CIP context and outlook. In the areas of genetic resources and crop improvement –considered the heart of the CIP factory— priorities and specific objectives are organized around the main biotic and abiotic stresses. Biotic concerns (fungi, viruses and bacteria), plus abiotic stresses (drought, soil fertility, etc.), explain most of the yield gap faced by farmers. Improved classification of germplasm –i.e., resistant to priority pests and diseases— and subsequent crop improvement (including genomic research), are presented as essential steps in the CIP "technology supply chain". CIP's strategic plan asserts that potato and sweet potato constraints can be addressed with a combination of plant cultivars and management practices.

Disease-free planting material has been the farmer's main concern in potato and sweet potato production. In fact, a recent ex-ante impact assessment conducted by CIP (Fuglie's paper) identified the two technologies that have the most contribute most to rural poverty alleviation:

- planting material and viruses control in sweet potato; and
- Seed systems and viruses in potato.

CIP's Plan also tackles the complexity of Integrated Crop Management, and identifies the following four key research areas:

Evolution of insect and pest populations;
Crop modeling for analytical and predictive purposes;
Insects and pests in agro-ecosystems; and
Information and communications technologies.

The fourth research area, NRM, is presented less precisely. Innumerable issues and themes to be examined are described, with the general purpose of "conducting a complex system analysis to explore ways of developing robust seed systems." A CCER conducted in early 2007 recommended that this area define a "roadmap with a tool kit".

Possibly lacking in CIP's Strategic Plan and particularly regarding the Center's traditional core business (its main technology supply chain) are the long-term (2016) goals driving specific objectives. The Panel acknowledges that current scientific knowledge perhaps does not allow setting more explicit goals for all themes, which explains the specific, short-term objectives presented. The upshot is that the Plan does not envisage any significant breakthroughs, meaning that the kind of progress expected is incremental only, and along a perhaps too broad front of

issues in each area. The relatively high number of 2006 output targets contemplated by CIP (132) compared to a CGIAR Centre average of 75 is an indicator of this apparent lack of focus in CIP's research agenda.

This Panel is also concerned about the challenges and incentives driving CIP's scientists. Some of them claim that MDG targets do not spur the interest among scientists that long-term R&D challenges incite. In the Panel's view, setting long-term research goals need not imply sacrificing funding prospects. When knowledge and related technologies in a given research field set long-term goals attractive to stakeholders, a powerful magnet materializes, attracting additional resources.

The Plan presents CIP's fifth research area, Innovation Systems, as a method to tap into potential CIP opportunities. The narrative consists of a rather long list of themes and studies that CIP will address to ensure that technological fixes impact on farmers' livelihoods. Unfortunately, the narrative lacks a description of priorities in the form of a relevant, finite set of issues around which a research action plan could promptly be initiated.

In conclusion, the Panel would like to commend CIP for the breadth and depth of the reports on its five areas of research. However, though informative and thorough, they are not useful tools for developing operational plans (MTPs). Indeed, the 2007-2009 MTP, the first reflecting CIP's new Strategic Plan, includes a research portfolio with no significant changes compared to the 2006-2008 MTP.

A Business Plan for CIP

This Panel suggests that CIP develop a Business Plan as an integral part of its Strategic Plan. A Strategic Plan needs to be supported by funding expectations. A Business Plan would support the Strategic Plan by laying bare its two most relevant ensuing practical applications:

i. projecting how diverse financial scenarios might affect the plans to reach the Goals, prompting the Centre to either reduce or expand its research portfolio; and
ii. Working out the related issue of critical mass of human and financial resources required to achieve a particular set of Goals.

A Business Plan serves also to rationalize either resource allocation to new research opportunities, or its reallocation among current opportunities, based on under- or over-investments discovered through impact assessment studies. It is also fundamental to the application of the "the pro-poor cycle" framework, and should be revised whenever the Centre alters its research portfolio.

CIP's Proposed New Research Areas

CIP's Strategic Plan proposes three new research areas: (1) further work with other Solanaceous species as high-value vegetables, presumably within SP 3; (2) greater emphasis on agriculture-health linkages, such as crop breeding for bio-fortification with vitamins and minerals; and (3) healthful horticulture in and around cities.

This Panel strongly supports additional efforts on agricultural-health linkages through potato and sweet potato breeding for enhanced nutritive attributes. This is a research objective of great importance for CIP´s clientele in all regions.

This Panel does not think that CIP should engage in new areas (2) and (3). The spread, the likely impact, and ratio of resources to output should guide CIP to add on or shelve alternative species. Even if one takes into consideration CIP's expertise in *Solanacea*, each species has its own complexities, which require specific efforts in the germplasm-breeding-agronomy-post-harvest and marketing-storage continuum.

Furthermore, the Panel believes that the initiative on healthful horticulture in and around cities lies outside CIP's comparative advantage. In addition, although efforts in several cities that have started programs for urban and peri-urban home gardens are showing impacts in terms of income and nutrition for slum dwellers, the Panel sees no clear IPG research objectives. CIP's involvement in new area (3) would certainly drain CIP's scarce human and financial resources, and would diffuse its research agenda even further.

About CIP's Research Impact Pathways

In an attempt to better link research with the selected MD target areas (MDTs), CIP has defined seven R&D themes, or research impact pathways, reflecting the most important needs of the poor, and identified based on external global trends and conceptual shifts. This is illustrated in Table 2.2. b.elow.

Table 2.2 Emerging Trends, Needs, Themes and MDTs

Global Trends	Needs of Poor	R&D Themes or Research Impact Pathways	MDT Challenges for CIP
Climate change Pandemics North-south inequalities A networked world Increased market penetration Conflicts and Security Urbanization	Access for stable and profitable markets	Link farmers to markets	Halve number of people suffering from extreme poverty
	Sufficient food all year	Reduce temporal and chronics hunger in vulnerable communities	Halve number of people suffering from hunger
	Healthy diet for the family	Improve access to safe and nutritious food	Reduce under five mortality rate Reduce maternal mortality rate
	Profitable and healthy farming	Sustainable intensification of potato and sweet potato based farming systems	Reverse the loss of environmental resources
	Diverse crops for multiple uses	Sustainable use of biodiversity	Reverse the loss of environmental resources
	Enhanced capacity for innovation	Institutional learning for pro-poor change	Integrate principles of sustainable development into country policies
	Secure and safe crop production	Sustainable and healthy horticulture in and around cities	Improved lives of slum dwellers

Source: CIP

With regard to the global trends referred to in CIP's Plan, the Panel suggests it include the "food for fuel *ad portas* revolution" that is profoundly affecting relative prices and crop patterns around

the world. The Plan presents two conceptual shifts: (1) "wider utilization of concepts of complex theory to address the multidimensional aspects of sustainable development"; and (2) "continuing evolution in the organization of international agricultural innovation systems".

Out of the seven "needs of the poor", two (enhancing capacity for innovation and access to stable and profitable markets are linked to conceptual shifts. The remaining five reflect the threats posed by global trends.

In its Strategic Plan, CIP claims to have adopted a paradigm that integrates the notions of innovation systems, agricultural knowledge systems, social organization of innovation and multiple sources of innovation. Given that innovation systems are absorbed by complex, existing systems –open systems within which large numbers of independent agents interact— CIP intends to use complex systems theory to introduce a method to conduct research at the multiple levels required to address the selected MDTs. Though conceptually appealing, and setting the rhetoric aside, the panorama for this undertaking is unclear to the Panel. How will this complex systems set –consisting of knowledge, community and innovation systems—be applied practically?

The Panel acknowledges that in this era of information technology, in which vast amounts of knowledge are disseminated, users tend to multiply, creating the need for interaction through partnerships and networks. At this point, the Panel notes CIP's efforts in this regard, and the fact that the Science Council has recognized them explicitly. (See Chapter 3 for an analysis and recommendations on this topic.)

Four of the research impact pathways (or R&D themes) listed in Table 2.2 relate to CIP's core business: (1) Reduce temporal and chronic hunger; (2) improve access to safe and nutritious food; (3) identify sustainable potato and sweet potato farming systems; and (4) identify sustainable uses of biodiversity. Two others are related to CIP as a "research partner for development": (1) link farmers to markets; and (2) institutional learning for pro-poor change, addressing CIP's commitment. And the seventh RIP responds to CIP's commitment to improve the lives of slum dwellers.

Apart from promoting a better conceptual understanding of the CIP Plan, the implementation of the approach (needs of the poor → R&D themes → MDGs) is unclear to the Panel. For example, how will CIP translate its set of R&D themes into the regional strategies? And if the R&D themes are to facilitate team formation and multidisciplinary work, should not some kind of a measurable goal be set for each theme, so that they can become *bona fide* instruments, promoting the specified outcome? In sum, the Strategic Plan should be strategic.

Research Priorities and Resource Mobilization

The last and most difficult step of any strategic planning process is that of setting robust priorities to aptly mobilize and allocate resources. CIP's Vision exercise has been completed, and a corresponding Strategic Plan has been drafted. However, while both efforts in this respect are commendable, in the Panel's view, the planning exercise is still unfinished. The 2002 EPMR recommended that CIP define a robust set of priorities, and this has not yet been done. Is CIP ready to tackle this last step to successfully complete the planning process?

CIP seems to offer two reasons for its delay in taking the final step:

1. Methods to tackle the multidimensionality of research priorities and impact assessment are not yet available; and

2. More participatory process and local collaboration is needed to decide priorities and mobilize resources.

While the Panel acknowledges the validity of these reasons, in its opinion CIP now possesses the relevant information to move ahead. The new quantitative and participatory methods will serve CIP in the final adjustment of its research portfolio.

Tables 2.3 and 2.4 below illustrate actual resource allocation and expected research impact for regions and selected technologies from Fuglie's (2007) ex-ante impact assessment study. Fuglie used two basic impact indicators:

1. The impact of CIP technologies on potato/sweet potato consumers and producers; and
2. The impact solely on poor rural potato/sweet potato farm households.

Figures presented are percentages, and logically, optimal resource allocation suggests that actual percentage resource allocation should lie between the respective percentages of the two indicators. Although these indicators are the product of an ex-ante analysis, and are thus speculative, they show ample space for reallocation both among regions and technologies and can rightly be taken as initial inputs to decide on an approximate set of priorities for CIP.

Table 2.3 Actual Regional Allocation of CIP Research Resources (2005) Relative to [Expected] Impact (In Percentages) (*)

REGION	RESOURCE ALLOCATION	AGGREGATE BENEFITS	RURAL POOR BENEFITS
LAC	51.0	2.5	4.1
SSA	21.3	12.8	44.0
SWCA	12.7	11.6	10.0
ESEAP - S	8.0	2.5	1.1
ESEAP -N	7.0	59.0	40.7
TOTAL	100	100	100

(*) Excludes research allocation to Global Impacts

Source: Fuglie, K. 2007.

Table 2.4 Resource Allocations and Research Impact for Selected CIP Technologies/Research Areas

Technology/ Research Area	Crop (*)	Resource Allocation US$ Million 2005	%	Aggregate Economic Surplus US$ Million/Year	%	Economic Benefits to Rural Poor US$ Million/Year	%
Late Blight	P	1,893	21.7	319	26.5	175	18.6
Breeding for Virus resist.	P	1,029	11.8	119	9.9	65	6.9
Seed Systems and Viruses	P	920	10.5	257	21.4	152	16.1
Enhancement Vitamin A	S	865	9.9	29	2.4	23	16.1
Integrated Pest Management	P	853	9.7	28	2.3	12	1.3
Utilization Animal Feed	S	617	7.0	30	2.5	30	3.2
Market Chain Enhancement	P	577	6.6	4	0.3	9	1.0
Bacterial Management Wilt	P	470	5.4	25	2.0	14	1.5
Increasing Dry Matter	S	464	5.3	92	7.7	80	8.5
True Potato Seed	P	421	4.8	12	1.0	6	0.6
Planting Mat. & Virus Control	S	406	4.6	284	23.6	253	27.0
Breeding for Processing	P	219	2.5	2	0.1	121	12.9
Total Potato	P	9925	72.0	773	62.0	558	57.0
Total Sweet potato	S	3860	28.0	474	38.0	428	43.0

(*) P stands for potato; S stands for sweet potato
Source: Fuglie, K. 2007.

At this point, the Panel would like to offer an approximation to a robust set of priorities for CIP, based on these indicators, plus information gathered in the interviews with CIP scientists and during the field visits, plus the Panel's detailed discussion of CIP's research projects provided in Chapter 3. According to the ex-ante impact assessment study Fuglie (2007), the above priority set includes five potato technologies standing high in terms of the size of their impact, and four sweet potato technologies showing the highest returns to poverty reduction. The robust set of priorities is as follows:

Potato Research Priorities

- Completing the evaluation of the potato germplasm, the constitution of core collections and cryo-conservation of accessions
- Breeding for combined resistance to late blight and viruses
- Breeding for regional requirements (including processing attributes and different nutritional traits)
- Integrated crop management including host resistance (for health and environment) specifically for Colorado potato beetle, bacterial wilt and late blight
- Support seed production program development in needed Regions

Sweet potato Priorities

- Breeding for combined quality (dry matter and nutritional traits including beta-carotene)
- Breeding for viruses resistance
- Developing and disseminating methods for disease-free planting material and virus control
- Integrated pest management specifically for sweet potato weevil

The proposed Business Plan to be integrated to the Center's Strategic Plan, should be able to set up different (realistic) funding scenarios (CIP´s Board has proposed a significant growth in the Centre resources over the next 10 years) with the critical masses of human resources allowing the development of variants within the suggested priorities. The aim should be to allocate 70-80% of total resources to that set of priorities and simultaneously to look for a better balance between potato and sweet potato as suggested by the referred-to ex-ante research priority assessment: 60% to potato and 40% to sweet potato.

Concluding Remarks on CIP´s Vision and Strategic Planning Exercises

CIP has done a commendable job in its Visioning and Strategic Planning exercises. The driving forces have been many and of different nature, aiming at consolidating and taking advantage of Center's past work on the one hand, and at attracting additional resources from Center's donors/investors on the other. In this process, CIP has ended up with activities that are too many for the human and financial resources available. In the view of the Panel, CIP should apply its resources to do real science work on a sure foot, for real life problems and challenges in the regions where the potato and sweet potato systems are dominant for food and income among poor peoples of developing countries.

Recommendation # 2

Because CIP must have in place a sound Strategic Plan to guide the Centre through global changes in the policy and science environments, and to make the Center's direction clearer in terms of research priorities in response to the needs of the poor potato and sweet potato producers in the identified target areas, ***the Panel recommends*** that CIP develop a completed version of its Strategic Plan, that includes the following considerations:

1. The relevant Millennium Development Goal targets to which CIP expects to make a contribution through its research of an international-public-goods nature should be clearly defined as "impact boundaries" in the typical sequence: inputs → outputs → outcomes → impacts.
2. The Centre "output boundaries" should be clearly recaptured as being new potato, sweet potato and Andean Roots & Tubers technologies, plus the policies and institutional innovations related to these commodities.
3. An analysis of the needs and opportunities in the target areas *vis-à-vis* the CGIAR Science System Priorities should be conducted for a better alignment of CIP's research portfolio.

4. Based on the needs and opportunities assessment of target areas (following CIP's Pro-Poor Research and Development cycle) plus the available scientific information and impact assessment analyses, a more robust, cohesive and internally complementary set of priorities should be developed together with a business plan.

3 QUALITY, RELEVANCE, AND IMPACTS OF CIP'S RESEARCH PROGRAM

The first section of this chapter presents a summary of the Panel's assessment of the productivity of CIP's research staff as one indicator of the quality of science at CIP. The sections that follow assess each of CIP's nine projects as reported in the Center's MTPs: The first six correspond to the work of CIP's Research Divisions (Impact Enhancement, Genetic Resources, Germplasm Enhancement and Crop Improvement, Integrated Crop Management, Natural Resources Management, and Agriculture and Health). The remaining three projects correspond to the work of three Partnership Programs (CONDESAN, the Global Mountain Program, and Urban Harvest).

3.1 Productivity of CIP's scientists

Scientific production is a good proxy of the quality of science. For this reason, the Panel requested CIP to provide information on scientific production of CIP's IRS research staff over the last five years. This information allowed the Panel to estimate values of indicators (students supervised, honors/prizes and publications) of CIP's staff productivity and to compare CIP's values with CGIAR averages. (Section on Research Performance in Chapter 6 reports the Science-Council's results of Centres' Performance Measurement for 2006.)

Over the last five years, CIP's researchers -- internationally-recruited staff directly involved in research (IRS-R) -- published around 570 publications, which means over 115 publications annually. Approximately 40% were journal articles, 82% of these peer reviewed. In addition, over three fourth of peer reviewed articles were published in ISI-indexed journals. These numbers suggest a highly prolific research community. But a closer look at values of a select set of indicators of staff productivity, provided in Table 3.1., suggests that CIP's performance is slightly below the average of CGIAR Centres for most indicators. This Panel's analysis also shows that in the last five years, between two thirds and 70% of researchers at CIP published less that the average CIP researcher, implying that the bulk of publishing can be credited to a few "stars".

Table 3.1 Scientists' productivity for the previous five years: CIP and the CGIAR (*)

Productivity indicator	CIP	CGIAR Average
1. % of IRS-R that have supervised degree students	52	56
2. average # of students supervised	5.5	4.9
3. % of IRS-R that have received honors and prizes	16	26
4. % of IRS-R that published peer reviewed publications (books, chapters, journal articles)	80	89
5. Number of peer reviewed publications (books, chapters, journal articles) per staff member per year	1.04	1.02
6. % of IRS-R that published peer reviewed journal articles	77	83
7. Number of peer reviewed journal articles per IRS-R per year	0.7	1.2
8. Number of peer reviewed journal articles per publishing IRS-R per year	0.9	1.5

(*) Considers only internationally-recruited staff devoted to research (IRS-R)
Source: 6th EPMR Panel, based on information provided by CIP.

3.2 Project 1 Impact Enhancement (IE)

Introduction

Impact Enhancement was created as one of the new six research Divisions at the time CIP developed a new research organizational structure during the Center's Vision exercise. The new Division was put together by grouping three projects of the previous research "project" structure: Impact assessment, Potato seed uptake and use, and Post Harvest. These three projects used to take 60% of total socioeconomic human resources at CIP. The creation in 2004 of the Impact Enhancement Division intended to provide a renewed framework for a more integrated social science research at CIP, while continuing the fruitful interaction of its social scientists with biological scientists, and while keeping social scientists in the other research Divisions, particularly in ICM and NRM.

Methodologies for impact targeting, a broader conceptual framework for impact assessment, impact indicators and methodologies for their measuring and monitoring, and strategies and tactics to add value to CIP commodity research, are mentioned as some of the themes for socio/economic research. Four projects were listed under this Division in the Vision document: (1) Characterizing user needs and opportunities for agricultural knowledge and technology; (2) Assessing dissemination strategies, adoption and impact; (3) Adding value to commodities through post harvest innovation; and (4) Institutional Innovation. This last project, Institutional Innovation, was later incorporated in the strategic plan as the area of Innovation Systems (see Chapter 2).

The 2002 EPMR, in essence, commended CIP for the quality and contributions in the field of social science, which at that time included analyzing research priorities; science and technology policy; studies on early acceptance and adoption; impact assessment; and strengthening capacity for social sciences research in national counterparts. But that EPMR recommended that CIP increase efforts in science and technology policy issues and in the development of frameworks for the collection and analysis of data on adoption and constraints. Simultaneously, that EPMR urged CIP to undertake, as soon as possible, a priority setting exercise (the last one had been conducted in 1996), and to incorporate the resulting priorities into the planning and budget of CIP.

Current Strategy and Overview

The current strategy, as reflected in the planned outputs for the Impact Enhancement Division (reported in the 07-09 and 08-10 MTPs) shows some changes and absences compared with the Social Science research agenda of some years ago. For example, the three outputs reported for the 08-10 period are: (1) The pro-poor R&D cycle validated (this tool was developed during the Vision exercise to guide the Centre with needed changes in its research portfolio); (2) strategies for linking farmers with markets and post-harvest innovations (this is one of the Papa Andina most important objectives); and (3) pro-poor policies for institutional learning and change (this is CIP's pathway to move from "enhanced capacity for innovation" to the MDG target of "integration of principles for sustainable development into country policies").

It is now quite clear for the Panel that the 2002 EPMR's main findings and recommendations for Social Sciences at CIP were not given enough consideration, either at the time the new Impact Enhancement Division was created, nor from there on. What the Panel sees instead in CIP's current strategy for Social Sciences -- at least from the perspective of the Impact Enhancement

Division -- is a research agenda that on the one hand is lacking of important themes such as adoption and research priorities, and on the other has been changing rather abruptly as its outputs for the periods 06-08, 07-09 and 08-10 indicate in the last two MTPs.

Resources

Because social science research at CIP includes impact enhancement and impact assessment associated with the mobilization of outputs from specific projects of other Divisions, the human and financial resources for this purpose are shared with other Divisions. Most of the IE Division's remaining funds correspond to the Papa Andina Partnership Program, which has its own management.

Table 3.2. Shows the evolution of the number of staff with social sciences training at CIP between 2002 and 2006. While total number of staff remained the same during the period, the disciplinary composition has changed. Two PhDs in Economics recently left the Centre, one in 2005 and the other in 2006; and one have been re-assigned as Deputy Director General for Research, which is mainly a research management position. In addition, not all staff members with socioeconomics background are involved in socioeconomic research. The human resources currently involved in social science research at CIP are scattered among Divisions and Projects, and their work covers a wide variety of topics that range from cost/benefit analysis of alternative technologies, to potential gains of disease controls, to ex-post impact assessment, to name a few. While professionals with other disciplinary backgrounds participate in social science research, it is hard to know how much of their time is dedicated to such work. The shift in disciplinary background of staff and the changes and absences pointed out in the current strategy; lead the Panel to conclude that the net allocation of human resources to produce socioeconomic research outputs has declined considerably since 2002.

Table 3.2 CIP, Disciplinary background of IRS in the social sciences, 2002 and 2006

Field	Degree	2002	2006
Economics or Ag. economics	PhD	6	3
Economics or Ag. economics	MSc	2	1
Anthropology	PhD	2	3
Anthropology	MSc	0	2
Extension/Communications	PhD	2	2
Extension/Communications	MSc	1	2
Total		**13**	**13**

Source: Information Provided by the IE Division

Main Achievements

As discussed in Chapter 2, Keith Fuglie's ex-ante impact assessment "Projecting Impacts on Poverty, Employment, Health and Environment" has been a major achievement of socioeconomics research at CIP. But ironically, this piece of research (recommended by the 2002 EPMR as priority) originally developed as a "Research Priority Assessment for the CIP Strategic Plan". Furthermore, this piece of research was neither used in the preparation of the Strategic Plan, nor by other social scientists at CIP to discuss eventual reallocation of resources among the different Centre research areas.

Socioeconomics research at CIP has also produced policy proposals and assessments of the potential value of potato genetic resources, which could be of interest to the countries of origin of potatoes, in light of trade liberalization and IPRs.

Regarding the Platforms and Consortia for processing and marketing of *tunta* in Puno to facilitate their entrance to higher income markets in Peru and Bolivia, the Panel wonders whether these could become models with more than local relevance. A User's Guide for Participatory Market Chain Approach (PMCA) has been produced, and published for use in Latin America and Africa. A recent appraisal in Asia assessed opportunities for Indonesia and Vietnam to become important suppliers of potatoes and sweet potatoes in global markets. Of particular IPG relevance is a study on asymmetric market information as a constraint to potato seed improvement.

Assessment

Whether the utilization of the Pro-poor R&D Cycle as a conceptual framework provides an opportunity for the integration of socioeconomics research work among Divisions and among Programs, is yet to be seen. But this opportunity will be missed unless CIP has a clear operational strategy and the necessary human resources are put in place.

The lack of attention and follow-up to Fuglie's paper, is another example of CIP moving away from areas of social science research, thought to be important to develop the kind of socio-economic information needed by biological and other scientists, as well as by managers and by donors and their advisers, in allocating funds to different research enterprises.

In spite of this lack of attention by CIP management, the Panel's assessment of CIP's IRS research staff productivity in terms of their publishing record during the last five years reveals that social scientists (including economists) have been highly prolific relative to CIP scientists with a different disciplinary background. CIP's social scientists produced 137 publications in the last five years, including peer-reviewed journal articles, books and book chapters, and conference papers. This represents nearly a fifth of all publications produced by CIP's IRS researchers. The average social scientist at CIP published 0.77 peer reviewed journal articles per year during the last five years, above CIP's average of 0.7, but still below the CGIAR the average of 1.2.

This Panel reviewed a number of social science publications, from peer reviewed journal articles to books and manuals, and notes their high quality with respect to methodology and analytical rigor. The findings are also interesting and relevant. This, notwithstanding, the Panel notes that a great majority of the key publications are produced in English only, which greatly limits their potential utilization.

The Impact Enhancement Division faces a major challenge in mainstreaming socioeconomic analysis throughout CIP's Divisions and Programs. The need for this was also evidenced by CIP staff in the workshop held in May 2007, which revealed eagerness of staff to participate in training and on the job initiatives for more socioeconomic research in each of their fields. Scientists were particularly concerned about the requirement that each project, regardless of its position in the research-innovation-development continuum, make a meaningful impact on specific MDTs.

Furthermore, the Panel perceives a generalized lack of awareness in CIP's scientists about the influence that policies and institutions, in short SP Area 5, have on their work. Hence,

mainstreaming socioeconomics at CIP will need to contemplate policy awareness. This Panel suggests that CIP undertake a consultation with Division and Program Leaders to assess their policy awareness and that of their work as a first step to designing appropriate training for CIP's staff.

Recommendation # 3

Because the Panel has observed that the work of the Impact Enhancement Division lacks a sound strategy on socio-economics at CIP and the appropriate human resource capacity to carry out quality research on the Division's stated goals, ***the Panel recommends*** that a CCER be commissioned immediately to review the Division's current goals, research agenda and human resources; that the CCER´s recommendations be acted-upon immediately after the review's completion; and that the CCER´s Terms of Reference:

1. require that the Review produce a well-defined strategy, research agenda and needed human resources; and
2. Consider the desirability of making this Division the integrator of social science research at CIP as a means to make further progress in the implementation of the 5th EPMR recommendations 6, 7 and 8.

3.3 Project 2 Genetic Resources Conservation and Characterization (GRCC)

Introduction

CIP's work on genetic resources encompasses potato, sweet potato and nine Andean roots and tubers [*oca, ulluco, mashua, maca, yacon, achira and ahipa*]. The main objectives of this project relate to germplasm collection, conservation of collected genotypes, characterization of collected genotypes, and multiplication of characterized genotypes to make them available to NARS and other types of organizations. These objectives fit well into the CGIAR System Priority 1A on conservation and characterization of staple crops. Preventing genotype loss motivates CIP collection activities. Keeping genetic resources of potatoes and sweet potatoes safe and alive in one biologic form or another so that they can be used as inputs in germplasm enhancement is particularly resource demanding. Evidence of the superior germplasm is often obtained from the documented knowledge of the described characteristics that enable breeders and farmers to compare them to existing farmer varieties. Reducing the collection to a useful "core" or representative subset implies additional work, because defining the "core" is based on correct and accurate identification and characterization of each collection. And because deploying diverse and or superior germplasm is the major channel of CIP's influence on potato and sweet potato systems worldwide, continuous germplasm multiplication is needed.

Current Strategy and Overview

Germplasm collection is an on-going activity at CIP. Efforts are focused on sustaining a steady stream of fill-the-gap genotypes. CIP aims to secure and conserve in the long-term wild and cultivated germplasm of potato, sweet potato, and nine Andean root and tuber crops from high diversity locations, and has followed this line of research aggressively for a long time. CIP is well known in developing and developed country research organizations for the germplasm that it has deployed.

Two main outputs are planned for the next two years (2007-2009 MTP):

- Output 1. Wild and cultivated genetic resources of potato, sweet potato and other root and tuber species and associated information collected, securely conserved through integrated ex-situ, in-situ and on-farm approaches and disseminated to users worldwide.

- Output 2: The diversity of wild and cultivated genetic resources of potato, sweet potato and other root and tuber species is assessed and useful biotic and abiotic characters and nutritional and health-promoting attributes are characterized, documented, and made available to users worldwide.

Table 3.3 shows the output targets in terms of the number of genotypes or accessions that will be handled according to the 2007-2009 MTP:

Table 3.3 Output Targets corresponding to the number of genotypes to be handled.

Activity	**2007/2008**	**2008/2009**
Collection	230	-
Conservation	400	-
Regenerate	2900	-
Cryo-preserve	518	-
Store as DNA	2100	-
Monitoring	700	-
Characterization	150	936
Introgression study	-	310
Inheritance study	-	-
Data base	-	-
Herbarium	500	-

Note: The inheritance study will occur twice. The data base maintenance is continuous. "-"means the activity does not occur in that year.

Resources

The GRCC Division has three agronomists and two geneticists. In 2006, genetic resources research spent US$1.26m. Out of this, US$1.03m (82%) was financed with the Center's own income and unrestricted funds. This funding structure implies that the major sway in what was decided and implemented has been mainly determined by CIP's own assessment of the priorities for its genetic resources work.

One of the strategic issues identified by the Science Council for this review pertain cuts in budget for Project 2 for 2007, between what was planned in the 2006-2008 MTP and what was established in the 2007-2009 MTP. Indeed, having dropped from US$2.54M in 2002, the project for this budget is half of what it what five years ago. The Panel found no rationale for CIP's reduction of efforts on GRCC activities, and considers that the reduction of the budget for this project is certainly not a trivial issue for CIP's ability to produce IPGs, given the strategic role of conserving genetic diversity for roots and tuber crops. The 2008-2010 MTP contemplates a budget increase to US$ 1.73M in 2007 for this project, which is then planned to average US$1.67M annually from 2008 to 2010. This level of resources will certainly not allow CIP to make any significant progress in characterization activities, which, as discussed later, are required in order for CIP to be able to consolidate a core collection, and in order for CIP to strengthen uptake. CIP needs to devise a strategy to increase and sustain funding for this project.

Main Achievements

- The current total potato, sweet potato and other Andean root-tuber collections maintained in trust at CIP's gene bank comprise: 10,494 landraces covering 18 species, and 3,551 accessions

of 264 wild species, 7448 research materials under development and over 5,000 herbarium specimens.
- The in-vitro repository has 4,290 potato specimens, 3,536 sweet potato specimens and 737 specimens of other Andean roots and tuber landraces; out of these, 57% potato, 37% sweet potato and 40% Andean roots and tubers have been pathogen tested.
- During 2002-2005, 2,586 potato, 1667 sweet potato and 64 Andean roots and tubers sets were distributed to 28 developing countries and 14 developed countries.
- The potato and sweet potato collections have been duplicated for safety purposes in INTA, Argentina and CIAT, Colombia.
- Virus-elimination and cryo-conservation techniques are well in place.

One of the recommendations of the 2002 EPMR was that CIP establish a state-of the-art high throughput genotyping facility; skills and competency strengthening in bio-informatics and computational biology. CIP has followed this recommendation in letter and spirit and a high-throughput genotyping facility was established at CIP in early 2004. The main activity of this laboratory has been the production of micro-satellite marker data for potato.

Assessment

The GRCC Division's has achieved much and its performance, given its scarce resources, is commendable. The genetic resources collection and conservation work is well advanced. But the staff and financial resources are spread too thin, and the Division's work on characterization is far from complete.

The molecular characterization of germplasm accessions will help, not only in studying the genetic diversity but also in the constitution of the core collections for potato and sweet potato. But a core collection formed without taking into consideration the various phenotypic and agronomic attributes, including resistance to various biotic and abiotic stresses will be of little use to the CIP's breeders in Lima and in the Regions and to developing country scientists. The slow progress in phenotypic and agronomic evaluation of germplasm is obvious in Table 3.4. Hence, characterization, phenotypic/agronomic in particular, should be given top priority so that it is completed for the totality of CIP's collection at the earliest possible date.

For example, the Panel sees the constraints of weevil damage as essential to realizing all the benefits from good genetic stock or from their enhanced derivatives. Collections of sweet potato and their characterization for sweet potato weevil and work related to that critical issue affecting all sweet potato-growing regions should be revisited bearing in mind the past experiences at CIP and elsewhere.

Table 3.4 Progress in characterization of genetic resources at CIP

Potato				
Attribute	**1997-2001**		**2002-2006**	
	Wild	**Cultivated**	**Wild**	**Cultivated**
Late blight resistance	No data	No data	~130	~700
Bacterial wilt resistance	No data	No data	~530	~210
Virus resistance	No data	No data	<350	~3200 (PLRV) ~2100 (PVX) ~3100 (PVS)
Drought resistance	0	0	0	~30
Nutritional	0	0	0	~500
Processing	0	0	0	~380
Sweet potato				
Virus resistance	0	500	<50	~700
Drought resistance	0	0	0	~80
Nutritional	0	No data	2	~1446
Processing	0	No data	0	~1500
Andean roots and tubers				
Nutrition	0	50	0	~220
Processing	0	<5	0	~10

Source: Genetic Resources Conservation and Characterization Division

The Panel suggests after CIP completes the characterization of all collected genotypes; it will be in a better position to review the 500 plus core they now have. CIP could keep only core collections representing the total range of variability in terms of alleles for all important characters including resistance/tolerance to various diseases and pests and abiotic stresses as active collection in vitro and/or in tuber. All other accessions may be put into long-term cryo-conservation and as true potato seeds, which would reduce germplasm maintenance costs tremendously. In this respect, the Panel notes that while cryo-conservation is meant for long-term maintenance of accessions that are not likely to be used in the near future, the cryo-conserved germplasm at CIP is comprised only of 550 "core" germplasm accessions!

Share of resources to potato, sweet potato, and Andean roots and tubers

Over the years at CIP, there has been an unclear basis for the partitioning of resources to potato, sweet potato and other crops. CIP started research on just potatoes. And while in 1988, CIP's mandate expanded to sweet potatoes, GRCC's efforts are still largely concentrated on potatoes. With the exception of the IE Division's study (Fuglie 2007), the continued emphasis on potatoes has not been evaluated in terms of how this crop parts? Or ranks with sweet potato or with Andean roots and tubers in CIP's effort to bring maximum benefits to the poor. It is important that CIP carry out this evaluation thoroughly.

The Panel views the Andean roots and tuber crops as very important either as nutraceutical crops of endemic usage or as cash crops in the Andean region. CIP has collected a sizeable number of nine such species over the years. Their genetic resources accessions collected for this group of crops were maintained over the 2002-2006 period without direct usage in the focal breeding activities of the CIP or its relevant development partners. The discovery of bioactive ingredients of potential interest requires much more than mere proximate analysis of crude protein, carbohydrate, fats, minerals, vitamins, moisture, and fiber. And the additional fine work of

characterization and evaluation required needs more resources than currently available to CIP. These crops can be made more valuable after evaluation with the possible engagement of commercial concerns that would wish to explore how to make the best use of the collections rather than just as genotypes in store of unknown utility. Therefore there is need to examine the possibility of sharing the conservation cost for Andean Root and Tuber Crops with Private Sector and Public institutions. This will help CIP cut on its budget for this group of crops that are important though in a restricted regions of CIP's target area of operation. In addition, the Panel suggests that CIP do less collection and storage of the Andean root and tuber germplasm and conserve what they now have. Those areas that are not at risk of human damage should not be collected, except if they are to be used by CIP to solve specific areas of work for which new collections are required.

Fuglie's (2007) assessment suggests that impacts associated with sweet potato research are likely to be high. The greatly untapped sweet potato germplasm should be collected, conserved and characterization so that its potential be shifted to a higher gear. Therefore, the Panel suggests that about 5% of the GRCC budget be allocated to Andean roots and tubers, and that the remaining project funds be allocated in a ratio of 50-60% for potato and 40-50% for sweet potato.

GRCC in the Regions.
Just how much is done is difficult to quantify by regions, but this activity in SSA germplasm conservation is at a low scale. In order for GRCC outputs to be fully realized, and someday result in outcomes and impact, they should also actively involve CIP's Regions, through ex-situ conservation also in cultivation, gardens, and collections maintained/multiplied in various other agencies and even in farmers' fields. Only by actively engaging CIP's Regions, will utilization of the genotypes in local breeding efforts across the potato and sweet potato programs of the world, not just for CIP's, be spurred. The extent of germplasm work in the regions should be considered as the ultimate way for their security. NARS systems are to be strengthened to hold and keep them as replicate deposits, as not done in the case of INTA and CIAT.

EU Commissioned Review of Project 2
This Donor Commissioned External Review (DCER) on "Conservation and characterization of root and tuber crops genetic Resources" of August 2003 produced 11 recommendations. They are all in line with the thinking of the Panel. However, while the Panel agrees with the recommendations in general; and while the Panel also notes that all of them are positive towards helping the Project better serve the purpose of its *raison d'être*, the Panel would like to support the need and urgency to add far more weight on Recommendation 10 ("that CIP accords priority to the public accessibility of gene bank evaluation data").

The DCER examined adequately the structure and working of this Project. While it is important to accept their recommendations, the Panel understands that 2006 funding (MTP 2008-2010) of US$1.26M is unlikely to give the project enough capacity to fully implement them. This is because of the rather large number of plant species to be handled as well as the many inter-linked recommendations to collect, conserve, characterize, evaluate, document, and disseminate these genetic resources. The project is also requested to liaise with many other germplasm institutions. For example, the project still needs to acquire about 50 species of potato to complete the gap of its collection of all known Solanaceous species, yet the project is yet to complete the characterization of those already in hand.

The Panel believes that as much as the DCER recommendations are relevant, the reality of the circumstances of tight funding scenarios, CIP should adopt the 11 recommendations but review them in terms of their effectiveness, value to contribute to MTP and urgency. The need for internal priority setting among these recommendations is necessary. However, this exercise would take note of the ranges of resources at hand, time taken to complete the task, and the short-term relevance in attending to current constraints for which solutions from better germplasm is sought. It clearly appears to the Panel that it is an inescapable fact that the Andean and other root and tuber crops would have to enjoy far less of an emphasis compared to potato and sweet potato. See section on "Share of resources to potato, sweet potato and other crops".

Furthermore while the DCER recommended that CIP define its objectives for the establishment of core collections of different crops. This Panel feels that core collections should be constituted after the complete characterization of the germplasm not only for phenotypic and molecular diversity, but also for agronomic attributes, including responses to various biotic and abiotic characters important to breeding.

CIP's implementation of the DCER's recommendations are mostly on-going but at varied levels for each specific recommendation. CIP's Highlights for the 2002 to 2005 period indicate these levels.

Publications

The Panel examined the key publications from this project. They relate to: studies on variation in the major characters and diversity/taxonomy of the genotype and identification of the collections held in CIP's gene bank. These publications though related to the project activities, need to be re-presented in assembled formats for many users of the germplasm. Only about half of the papers attend to issues that are relevant as IPGs that would key into the development or enhancement of these crop commodities.

No matter how rigorous and exciting, scientific information should be effectively disseminated to NARS and other research and extension organizations, especially in developing countries, if science is to be mobilized to create impact. Results from the evaluation and characterization work should be documented, published, and disseminated periodically in the form of user-friendly electronic databases and in printed form, and made available to the potato and sweet potato researchers globally. Effective dissemination of information resulting from the evaluation and characterization will help users know the available "supply" of germplasm attributes, better focus their demands from CIP, and better plan their research work.

Recommendation # 4

Because the characterization of genetic resources is important for its utilization in the breeding program, and because this process has been relatively slow at CIP, ***the Panel recommends*** that CIP:

i. Accelerate the characterization of the remaining genotypes in the Center's gene bank, and that this be completed for all key traits;
ii. produce a compendium based on passport, morphological and molecular data and characterization results for key biotic and abiotic stresses; and
iii. Make this information widely available to all collaborating NARS to enable them to make choices of what may be needed to enhance their genotype selection and crossing schemes.

3.4 Project 3 Germplasm Enhancement and Crop Improvement (GECI)

Introduction

Being located in the centre of diversity for potato and many other root and tuber crops conveys comparative advantage in access to landraces and wild species of these crops. CIP is aware of its advantage in this respect, and thus potato and sweet potato improvement are the core elements of CIP's research agenda. CIP's work in this area includes genetic enhancement and crop improvement through a variety of techniques, ranging from traditional plant breeding, to using a range of modern tools of biotechnology.

CIP's MTPs indicate that objectives of this project are to undertake activities that should lead to the following major outputs:

i. Development of potato populations, clones and TPS varieties possessing resistance to major diseases and pests, having market oriented traits and nutritive value;
ii. development of sweet potato varieties with enhanced dry matter, β-carotene, Fe and Zn content with resistance to pests and diseases especially virus complexes;
iii. enhancement of breeding methods via new tools, information and capacity building; and
iv. Development of transgenic potato and sweet potato.

These objectives fit well into the CGIAR system priority 2 (2A, 2B, 2C and 2D) that is aimed at producing more and better food at lower cost through genetic improvements. Genetic enhancement of a crop also indirectly promotes conservation and characterization of biodiversity, and hence the CGIAR system priority 1A.

Resources

Investment in this project has been quite satisfactory for the period 2002-2006 and it has grown to more than double between 2002 (US$ 3.53M) to 2006 (US$ 7.47M). However, 2006 budget also included the grant of US$1.3M for the VITAA project which is a not a research but a development/extension awareness campaign project for scaling-up the use of vitamin A-rich sweet potato. If this amount is excluded, even then the germplasm enhancement and crop improvement project will have more than US$6.0M in 2006, an amount that is good enough for undertaking the activities of this project.

Current Strategy and Overview

Despite their outstanding biological, food value and income-generating potential, potato and sweet potato can yield poorly and suffer high yield losses in marginal environments. Furthermore, reliance on pesticides to maintain productivity in tropical and subtropical ecologies has significant negative effect on the environment and human health, in particular for smallholders who often misuse pesticides when they are available. Realizing this scenario, CIP has embarked upon genetic enhancement and crop improvement programs for potato and sweet potato. One of the major genetic enhancement activities is to develop parental lines and varieties carrying durable resistance to late blight caused by *Phytophtora infestans*, which is the number one problem of potato production worldwide. Advanced populations carrying quantitative resistance to late blight are improved for meeting high standards for productivity and table quality. Advanced clones are being evaluated for future releases in target countries of Latin America, Africa, and Asia where European-type tubers are preferred.

CIP is also developing potato clones carrying combined resistances to viruses PVY, PVX and PLRV, which are the major causes of seed degeneration. By producing varieties with combined

resistance to various viruses, CIP's strategy is to provide an inbuilt system of production of virus free seed. Tissue culture plantlets of advanced selections are sent to the regions for multiplication and testing under regional environments.

Sweet potato improvement has centered on higher yields through better resistance to SPVD and higher dry matter content. The new move is to enhance beta-carotene together with Fe and Zn. Such orange-fleshed sweet potato varieties are particularly developed for Africa to provide β-carotene rich cheap staple food to the nutritionally-starved population of this continent.

Post-harvest quality is another area for which CIP evaluates breeding populations, in order to identify potato cultivars that demonstrate outstanding parameters for processing as potato chips. For quality screening Near Infrared Reflectance Spectroscopy (NIRS) technique is used for nutritional traits including protein, total and specific carotenoids, Fe, Zn, P and Ca, allowing high selection intensities to improve potato and sweet potato crops for better nutrition.

Conventional as well as parthenogenic breeding approaches are being used to produce TPS progenies having high and stable yield and resistance to late blight and such populations are distributed for evaluation to Asian and the Caucasus countries. Tuberosum x Andigena crosses are exploited to produce heterotic TPS progenies.

CIP also undertakes water-stress studies to identify specific attributes suitable for breeding drought tolerant potato for different target regions. Biotechnological tools like DNA fingerprinting, molecular mapping, marker assisted selection, genetic transformation are being used to achieve the crop improvement objectives set forth by the CIP. Transgenic are being developed for late blight resistance, enhanced content of free-lysine in tubers, and resistance to PLRV in potato, and for high amylose starch, resistance to SPVD complex and Andean weevils in sweet potato.

Main Achievements

1. Sixty-four potato and sweet potato varieties were released by National Research Institutes of 13 countries during 2002-2006 by selection from the crosses or by utilization of advanced breeding/germplasm lines supplied by CIP.
2. Over 600 new hybrids (not clear) potato and four new sources of resistance to late blight were developed by controlled crossing and embryo rescue methods for broadening the base of resistance to this important disease.
3. Sensitive and fast screening methods have been developed for bacterial wilt and nutritional traits including micronutrients.
4. A tetraploid molecular genetic map of potato was developed facilitating the localization of new major gene for PLRV resistance with a view toward marker-assisted selection in breeding programs.
5. Transgenic potatoes with constructs conferring resistance to late blight and PLRV, and transgenic sweet potatoes with constructs conferring resistance to SPVD and weevil have been developed. Transgenic potatoes and sweet potatoes with enhanced content of free-lysine and high amylose starch, respectively have been developed. Plant transformation vectors with non-antibiotic selectable marker gene have been developed.

Assessment

The genetic enhancement program of the CIP has made significant advancements in developing late blight and virus resistant breeding lines through conventional breeding by deriving

resistance from diverse wild species and thereby providing durable and broad genetic base resistance for these two most important pathogens of potato. These breeding lines are being improved for characters like early tuberization/early maturity, tuber dry matter, micronutrients and processing attributes. Though comparatively less effort appears to have been made on sweet potato in this regard, virus resistant breeding lines of this crop too have been developed.

The supply to, and utilization of such material by national breeding programs has resulted in the release of as many as 64 potato and sweet potato varieties in 13 countries. But the adoption of these varieties, particularly of potato, is not as expected. Similar remarks had been made by the Interim Science Council (iSC) of CGIAR in its commentary on the report of 2002 EPMR. The quote: (The iSC is alarmed by the discrepancy between the release of CIP-derived varieties and the much lower and variable adoption of those materials). This also reported in the Science Council's Brief No5, of October 2006).

The adoption of a new variety depends upon: (1) the level of its superiority over the existing varieties in cultivation; (2) multiplication and supply of the healthy seed material of the new variety to the farmers; and (3) the duration over which the variety has been disseminated. The genetic enhancement program of CIP is mainly concentrated at its headquarters, and actually amounts to pre-breeding/breeding of potato for resistance to late blight and viruses and of sweet potato for viruses. Utilization of wild species for introgression of diverse genes into the breeding populations has resulted in breeding lines that are late in maturity, and possess tubers unlike those of the desired types as produced by the European and American potato varieties. CIP is aware of this problem, and is therefore trying to improve the pre-bred lines for agronomic and processing attributes. These lines, being selected mainly under the Peru conditions, are also not well adapted to the conditions prevalent in other target countries, which have many additional requirements that vary from region to region. For example, highland tropics of Sub-Saharan Africa, South East Asia and the Andes of South America are characterized by a short day length, with a rainfall pattern that allows 1-3 potato crops per year. Frost and drought constitute significant abiotic limitations to optimal crop production in parts of the Andes and Sub-Saharan Africa. On the other hand, the continental semiarid region of Central Asia is characterized by long day length where the crop is irrigated, and soil salinity, drought and high temperatures are the main abiotic constraints. Early maturing/bulking cultivars are often required in subtropical lowlands of South West Asia, South East Asia, and Central and East Africa for diversified cropping system, whereas subtropical highlands of East Asia, typically with one potato season per year, require cultivars with medium maturity. Colorado potato beetle is a serious problem of potato in central Asia and Caucasus countries, and bacterial wilt in sub-Saharan Africa.

Varieties which lack regional adaptation particularly under smallholder conditions prevalent in developing countries are not expected to find good acceptability, even if they are resistant to late blight and viruses. Resource poor farmers of developing countries need varieties which have high yield with low inputs and assured economic returns, even if harvested at varying crop duration. In tropical and sub-tropical countries temperatures start rising after the potato crop is harvested. In these countries, low-temperature storage facilities for perishable crops like potato and sweet potato are inadequate and expensive. Hence, varieties of potato and sweet potato with good storability at ambient temperatures are required for such regions. These varieties should also possess attributes needed for trade and processing, otherwise farmers are excluded from emerging markets. Thus, breeders need to combine a large number of characters in a single genotype, so that its value-added is sufficiently high to motivate farmers to replace more

traditional varieties. This is a cumbersome task, particularly so in potato and sweet potatoes, as both these crops are polyploidy and yield best under highly heterogeneous conditions.

For such a complex scenario, it is desirable that CIP undertake pre-breeding/breeding for characters of universal importance like late blight and viruses at its headquarters, and that these pre-bred populations are improved for specific regional requirements by breeding programs undertaken in the concerned region, by CIP's Regions. This would result in development of breeding lines combining major requirements of the region, including adaptability. Such improved lines may be accepted by the farmers directly as cultivars or can serve as desired types of parents for use by the NARS in developing varieties having superiority over the existing cultivars of the region. For the successful adoption of the new varieties, CIP needs to support NARS in the development of the seed production programs in the target countries so that healthy seed of the recommended varieties are made available to the farmers at a reasonable price. In trials with the breeding material, healthy seed of same physiological age for the control varieties should be used for evaluation, in order for results to be fare and reliable.

One of the recommendations of the 2002 EPMR was that the potato improvement activities are coalesced into a single project and the leader be empowered to champion the development and delivery of a coherent breeding program. CIP has implemented this recommendation by putting all breeding activities under the Division of Germplasm Enhancement and Crop Improvement with head of the Division as Project Leader. This has been a good step forward. But the Panel feels that there is need to integrate the research and development activities so that genetic improvement is aimed at not only one or two characters, but for the development of clones/varieties possessing all characters required by the regions. The Panel thus strongly emphasize that CIP should strengthen the breeding activities in the regions so that potato and sweet potato populations/clones developed at its headquarters are improved for the specific attributes as per requirements of the different regions.

Due to global climate change, warming and water scarcity are being looked as the major future constraints for sustaining agricultural production. Though CIP is doing some work on drought tolerance in potato, more resources need to be used for research on these problems. CIP should concentrate on developing practical screening techniques for heat and drought stress, and develop breeding lines tolerant to these stresses. Marker-assisted selection, and identification and cloning of genes imparting tolerance to these stresses should get priority over the use of the biotechnological tools for late blight and virus resistance, which can be handled also through conventional breeding quite effectively as has been achieved by CIP. Bacterial wilt and Colorado potato beetle in potato, and weevil resistance in sweet potato for which durable source of resistance are not available, are other important candidate traits for genetic improvement through the intervention of biotechnology. Hence, in the Panel's opinion, CIP should use its strength in biotechnology for genetic improvement of heat tolerance, drought tolerance and bacterial wilt and Colorado potato beetle resistance in potato, and weevil resistance in sweet potato.

CIP has done good work in genetic transformation and has developed transgenic potatoes with constructs conferring resistance to late blight and PLRV, and transgenic sweet potatoes with constructs conferring resistance to SPVD and weevil. Transgenic potatoes and sweet potatoes with enhanced content of free-lysine and high amylose starch, respectively, have also been developed. CIP had a CCER on development and deployment of genetically engineered (GE) potatoes and sweet potatoes in June 2005. The CCER Panel made as many as 73

recommendations in this regard. The CCER's major recommendation was that CIP should go forward with GE traits as it has institutional advantage to draw upon this strategy for genetic improvement of potato and sweet potato. But the CCER also suggested that CIP should ensure that it only develops GE crops that offer benefits to the resource poor, and both fit for purpose and are fully bio safe. While the Panel for this 6th EPMR agrees with the strategies suggested by the CCER for development and deployment of transgenic, it notes that the CCER did not take into consideration the fact that scenario regarding the commercialization of transgenic is still controversial. Therefore, the Panel feels that since CIP has already made considerable progress in the development of transgenic for various characters of interest, it should conduct field trials with these transgenic in the target countries to test their worth. However, if these countries are reluctant in granting permission for conducting field trials with the transgenic, CIP should go slow on transgenic work, and divert the resources for the development of marker based screening techniques for use in association with conventional breeding for the characters which are otherwise difficult to select based on phenotype and have high genotype x environment interaction.

CIP had once projected True Potato Seed (TPS) as a widely adoptable technology as an alternative to clonally potato seed. However, CIP as well as NARS in many third-world countries could not be successful in popularizing TPS technology because this technology showed lower and in some cases negative returns. It is now felt that TPS is a niche technology for situations where reasonable quality clonally seed is not economically available. CIP is thus now rightly limiting its research on TPS and testing the improved TPS populations only in some niche areas in South West and Central Asia. The two major inherent drawbacks that can come in the way of adoption of this technology, even in the niche areas are high sensitivity of TPS seedlings to environmental stresses, and longer duration of the TPS crop compared to one rose from seed tubers. CIP is aware of these problems, and thus its TPS program includes breeding for hardy and early bulking/maturing populations having synchronized tuberization. CIP, however, should also undertake physiological studies to see what governs hardiness, and if possible look for genes governing hardiness and early maturity.

CIP's publications from this project, though few, have been relevant to the targets. These mainly concern genetics of late blight and viruses, and evaluation of potato and sweet potato cultivars for micronutrients and drought; and some are on genetic transformation. Most of these are of high quality and important for breeding potato and sweet potato for problems of universal nature. However, publications on identification of parental lines based on their breeding values for all major traits, and also relevant to regional needs would be of more practical value and thus should be aimed at in future.

Recommendation # 5

Because of the low adoption of CIP-derived varieties relative to the high number released, ***the Panel recommends*** that CIP implement full-fledged potato and sweet potato breeding activities at the regions so that parental lines/varieties expressing superiority over existing cultivars, and possessing required regional attributes are developed.

Recommendation # 6

Because warming and water scarcity are perceived as increasing constraints to sustainable agriculture as a result of climate change, ***the Panel recommends*** that CIP focus on developing breeding lines tolerant to these stresses, by using biotechnological as well as conventional approaches to develop practical screening techniques.

3.5 Project 4 Integrated Crop Management (ICM)

Introduction

The reasons for the differences between regions are many but among them, poorly controlled pests and diseases, poor seed control, inexpert crop management and storage, drought, and genotypes less than perfectly matched to the environment are among the most significant causes. With such a diversity of reasons why a crop may under-perform, it is evident that solving any one of the problems is insufficient to gain significant and lasting improvement. What are needed in each region are integrated solutions that minimize each risk of loss without worsening other risks. That is quite properly the aim of Project 4 at CIP, Integrated Crop Management (ICM).

Current Strategy and Overview

Research Project 4 has its origins in four former projects and GILB. These former projects, which represented a potentially confusing sub-Division of related topics, were: Integrated Management of Late Blight (LB), Uptake and Utilization of Potato Production Technologies: Seed, Virus and BW components, Integrated Pest Management (IPM), and Sweet-potato Improvement and Virus Control. Confusion of purpose was worsened by the combination of breeding and selection work with work on understanding and managing the diseases within each of these projects. The present arrangement with the separation of work on the genome from work on crop management, and the creation of a single Division with the ability to overview the range of related problems of crop health and crop management is much better than in the past. However, even yet, the structure is not without shortcomings, e.g. omissions from the range of topics covered.

The current structure within the Project is based on 'Outputs' described in the MTP 2007 – 2009 (Medium-Term Plan 2007 – 2009, p. 18) and which have progressed even over the last two years so that the two crops potato and sweet-potato are, at last, given equal prominence. The projected outputs are classified by the nature of the problem to be solved. Comparing the intended outputs for the interval 2007 – 2009 with the foreseen developments in these Outputs for the near future (2008 – 2010), it seems that changes in the definitions are largely concerned with improved specification of the targets' regions and dates. In each case the target is to meet the requirements of the Output in 'at least 3 priority countries per region' and to achieve that by 2012. In addition, Output 2 indicates a greater emphasis on the role of the soil as an important medium for the crops. Output 5 emphasizes the development of participatory strategies and methods for the socioeconomic integration of ICM.

This organization of the work giving emphasis to 'components', should allow staff to work in a more focused manner. And the emphasis on integration of management and the inclusion of both agronomy and seed systems in that management remit should encourage the development of solutions that are genuinely more applicable to real situations and, accordingly, have a greater chance of uptake by growers. These would be proper 'IPGs'.

The Panel notes a certain rippling repetition in the titles of the outputs. Comprehension of the range covered is aided by cutting away most of the repetition, leading to the following: Output 1 is about seed systems and Output 2 about integrating management of soil, seed, pest and disease for the subsistence and semi-commercial growers (for the first time describing the growers), while Output 3 is about diseases and Output 4 is about pests. In each case the output is planned to be developed, tested and disseminated as part of ICM strategies in LAC, SSA and Asian

priority countries. Output 5 is about strategies and methods … made available for improving … innovation systems in LAC, SSA and Asia. The Panel considers the word 'innovation' to be redundant in this context. What is required in these cases is the introduction of a system that works or that works better than a previous one.

The Panel understands that the relative emphasis on potato or sweet-potato should differ between outputs according to which species has the more serious problems within each component, e.g. realistic methods for production of seed with reliable health status, or the more serious need, e.g. orange-fleshed sweet-potato. That balance is likely to differ between regions and, possibly, even between countries, although there is no statement explicitly to that effect.

Making an appropriate choice in the balance of effort between one crop and another while working towards any of the 'Outputs' should entail thorough and repeated referral to Regional units within CIP. Such a practice would give regions a greater involvement in the definition and evolution of projects.

The inclusion of Output #5 is important to allow testing of each proposed solution for its coherence within a farm management system. Again, the use of participatory methods of testing will provide, at the one time, the most effective means to test the degree of integration and the best method of extension - to 'get the message across'.

It is most important to have collaboration between Projects. This has been achieved between Projects 4 and 5 in work such as the use of modeling and GIS to monitor pest and pathogen populations and predict emerging problems. Another example has been the elaboration of crop models to assess management technologies. Two examples of desirable collaboration with Project 3 are discussed later in the Assessment section.

Of the partners named in MTP 2007 – 2009 at pp. 55 – 57-sixteen are NARS headquarters staff-told the Panel that they received notification of problems and requirements within regions through the Regional Offices and were able to cite examples of this. It was also told that the Project plans visits to the Regions each year according to the problems identified by those Regions. The outstanding problem for expediting the work of CIP in Asia is the scarcity of permanent personnel there. However, the Project is looking to appoint an entomologist to Nepal, with the assistance of a donor country, to work on the problems in SE Asia, e.g. Potato Tuber Moth. Similarly they are planning, in response to a request from the region, to appoint a specialist in potato seed to work in China and Inner Mongolia. They are currently looking for funding to appoint an agronomist in Indonesia to work in a collaborative task between Projects 3 and 4. An important factor influencing CIP's ability to extend its work into the regions is the quality of the NARS. In some countries the NARS are strong and are well-supported by the national government. In others they are weak or even absent.

Project 4 has had the support of the OPEC fund for International Development to set up 'Researcher Field Schools' in Kenya, Uganda, and Ethiopia. These RFS are a mentoring system that is possible with good and strong NARS and provide an excellent means to carry CIP's outputs to their intended recipients. Such associations help the dissemination of CIP's research and enhance that of the NARS.

Main achievements

A large list of output targets achieved in 2006 was detailed to the Board of Governors in April 2007. The Panel was given a detailed account of achievements over the last five years. Among the highlights were the following:

Seed related research

Country-specific, cost-effective rapid multiplication technique has been validated as part of a seed production scheme for potato in Uganda, Kenya, Ethiopia, Uzbekistan, Bhutan and Afghanistan. And the same things for sweet-potato in Uganda, Kenya, Tanzania, and the Philippines.

Farmer knowledge and practices in the highlands of Peru about the use of inputs for soil fertility management in the potato crop, and also constraints in Peru related to conservation agriculture and soil fertility management in potato cropping systems have been understood and documented together with additional output related to soil management.

Integrated disease management LB team

Scientific knowledge about the interaction between P. infestans and -Solanum has been developed; LB biology studies demonstrated that one population attacks both wild and cultivated potato hosts. This knowledge simplifies the resistance screening. An international study led by CIP demonstrated geographic stability of quantitative resistance in potato cultivars.

A user-friendly LB simulator has been developed that works in the highland tropical Andes and is being used for epidemiology studies. Using threshold values of accumulated rainfall has been evaluated as a farmer DSS in the Andes, increasing the potential for working with resistant cultivars. In contrast, the idea of using mixed potato genotypes for controlling LB showed little effect.

Training modules for LB-related research have been developed for NARS and DM-LB strategies have been tested under farmer conditions in SSA and have shown promising results.

IDM BW team

Serological tests have been developed for detection of soil populations of *Ralstonia solanacearum*, and for its detection in irrigation water. A technique has been developed to detect symptom less bacterial wilt infection in potato stems before harvest; Detection methods for BW in potato seed and in the environment are being used by NARS in 12 countries (mainly in LAC and SSA). Knowledge on bacterial wilt epidemiology has been enhanced (e.g. soil factors and crops that affect pathogen survival). And promising bacteria, antagonistic to BW have been selected.

Further, and involving farmers: - From among 13 promising clones, 5 were selected with farmer participation in Peru and Bolivia for their low susceptibility to BW and were distributed to NARS in 4 other countries; BW cultural control practices were validated for potato production with farmers' participation in Peru, Bolivia, Kenya and Uganda; and a manual for farmer participatory training and research for IDM-BW was produced and several other diffusion materials were developed.

Virology team

CIP continues to be the most important source of antibodies to detect potato viruses for NARS and it is the only supplier of antibodies to detect sweet-potato viruses:

- **Potato**- ELISA kits distributed to 41 institutions in 28 countries;
- **Sweet-potato** - Antisera distributed to 44 institutions in 24 countries;
- **Sweet-potato** - Synergistic interactions among viruses (SPVD) cause major effects on yield, a new species of whitefly, Bemisia afer was determined as a vector of sweet-potato chlorotic stunt virus (SPCSV). Major sweet-potato viruses occurring in SSA confirmed, and control methods adapted and validated through FFS.
- **Potato** - Variability amongst new and emerging potato viruses (Potyviruses, Potexviruses and Carlaviruses) determined and protocols for their detection developed, Non-radioactive probes developed for detecting ASBVd, PSTVd, PVT, PLRV, PVX and PVY (replacing radioactive NASH technique), Probes also developed for PYW, PMTV and viruses of solanaceas (PMMoV) and for detecting groups of virus: members of genus Carlavirus (PVM, PVS and PLV)

Agro-ecology
IPM - PTM research - Model for population phenology of P. operculella has been developed and GIS software is available to support mapping of pest risk; another species was confirmed to be a dominating pest in potato fields and stores; improved understanding of factors affecting baculovirus effectiveness; and a dust-formulation of B. thuringiensis developed providing 5 months protection against both PTM species).

IPM: APW research (Andean Potato Weevil)
Two bio control agents were identified and an effective means was devised to inhibit field infestation by APW.

IPM: LMF, Whitefly
A complex of 5 LMF species was identified and its distribution was mapped; an entomopathogen was identified and its potential was evaluated.

Soil-related and integrative research
Farmer knowledge about soil management has been documented in Peru, conservation agriculture technologies (mulch) have been assessed, and beneficial soil micro organisms to improve plant growth and health have been identified.

Socioeconomic and participatory research
Participatory research and training methods (FFS) have been adapted and evaluated showing impact on farmer knowledge, practices and productivity. A method has been adapted to estimate the impact of pesticides for controlling the main potato pests in Peru. Potato-related knowledge has been characterization in Ethiopia, Uganda, Kenya, Bolivia and Peru. A participatory assessment method for analyzing poverty in relation to the potato crop has been developed.

A wide range of countries were involved as partners in the work just described. These included: NARS (Ecuador, Ethiopia, Kenya, India, Uganda, Uzbekistan, Afghanistan, Cameroon, Bolivia, Peru, Argentina, Brazil, China, Tanzania, Nepal, Philippines,); Universities (ETH-Zurich, Cornell, SLU-Uppsala, Copenhagen, Louisiana State, Wageningen, Finland, Sweden, California, Hohenheim, Humboldt); ARI (Institute of Biological Control-BBA, USDA, SCRI-Scotland, PRI-Wageningen, CIAT); and NGO(Peru). That range of partners and collaborators speaks volumes for the significance and quality of the science being conducted and of its relevance to national programrs.

Resources
The Project has seven team leaders and in 2006 there was an increase in the number of nationally recruited professional staff (NRS) to 16. (Associate Researcher – 2, Assistant Researcher II 11, Assistant Researcher I -3).

The total amount spent on Project 4 in 2006 and attributed across all the CGIAR priorities was US$ 4.79M or 21% of the CIP budget (MTP 2008-2010).

Assessment
It is reported that the outputs from Project 4 over the period under review included fifty papers in peer-reviewed journals, thirty book chapters, and one hundred papers in symposia and conferences. In CIP's Annual Report for 2005 (published October 2006) the list of selected publications included fifteen that were authored by members of Project 4. Eleven of these papers were published in international journals. Other papers were book chapters. We have not assessed that quantity of material directly. However, a list of key publications was provided and we have read all of these (nine) and made assessments of them.

The range of topics needed to present an integrated system for crop management is extensive. Each 'output' that corresponds to a class of pest or disease includes a wide range of problems – the interaction between the crop and whichever pathogenic species and, within any such interaction, the biological level that is appropriate for investigation. The agronomy output may range from seed conditioning, through crop management to soil condition and supply of water and nutrients and harvest to reduce the risk of disease. Underlying all these is the necessity for a robust system to produce healthy seed within the social and economic constraints of a region.

The range that is represented in the declared 'outputs' is good and is necessary but may not yet be sufficient. The component that is omitted from the current system and which the Panel considers could prove to be highly important is a team to work on the problems of nematodes – whether cyst nematodes or free-living ones. Both kinds of nematode can have serious consequences for the level of yield. Nematodes present a threat that is recognized in at least some of the regions visited and which are a nascent threat even where they are thought to be absent. Given the minimum levels of infestation which are detectable, it is evident that a field may become infected and it not be known for as many as 10 crop cycles,[4] by which time the problem has become serious and other fields have doubtless been contaminated either by movement of machinery or implements or by planting of saved, infected seed. Note: In the year 2000 – 2001 a task force was identified for work on nematology with CIP among the collaborating Centres - First External Review of the System-wide Program on Integrated Pest Management (SP-IPM) – 2003.

Two essential steps in the development of a potato crop are the process of tuber initiation followed by tuber filling. The time taken from planting or from emergence to tuber initiation is often described by the term 'maturity class' which is an attribute of a cultivar that is recognized during the selection of a cultivar and is generally retained as part of its description. However,

[4] Populations of potato cyst nematode (PCN) can exist for at least 40 years before detection through sampling by which time, assuming an even coverage across an infested field, the population could be in excess of 3,000,000,000 eggs/ha, when the sampled population could be measured between 0 and 5 eggs/g soil. This range is due to the distribution within the soil profile and the clustering of cysts on root material and the nature of PCN sampling.

the time taken to tuber initiation is not an invariable characteristic. It is influenced by both day length and temperature, and therefore by the interaction between these two variables. This feature of the potato can be among the factors responsible for a poor uptake of new cultivars in the regions targeted by CIP. That is, they may be well suited under the conditions in which they were bred, but yet not well suited in their intended destination. This is another problem that could usefully by investigated by collaboration between Project 4, Output 2, and Project 3, Outputs 1 and 3. However, in this example, more than in most, it would be very important to involve the destination region in testing the characterization of a candidate new genetic line; an example where collaboration between headquarters and Region is essential.

Taking the Project 4 as a whole, according to CIP, the members of the Project have had key partners in several agricultural research institutes in Europe, twelve universities in Europe and the USA, other CGIAR institutes and several NGOs.

Work was described that was done in participation with the regions SSA, SWCA, LAC and included FFS. In the MTP 2007 – 2009, the Project members seem to be aware of the importance of strengthening their links with their ultimate users. The MTP 2007 – 2009, at pp. 55 – 57 lists thirty two collaborators ranging from NARSs and NGOs through 'Networks' and 'Programs' to Universities in developed countries. There is a good account given in MTP 2007 – 2009 at pp. 52 – 54 of mechanisms by which scientific outputs can be argued to match 'moral' requirements from the CGIAR.

Recommendation # 7
Because nematodes present a threat recognized in at least some of the Regions, ***the Panel recommends*** that CIP make a full assessment of the actual and potential constraint to regional potato production posed by nematodes (PCN and free-living), and plan its research on integrated crop management accordingly.

Recommendation # 8
Because water stress is the abiotic factor that presents the most serious and common depressant of yields of potatoes and sweet potatoes, and because the solution to the problem requires an integrated approach from genotype to landscape, ***the Panel recommends*** that the Integrated Crop Management Division take up the opportunity to investigate options for drought avoidance and tolerance, jointly with other Divisions.

3.6 Project 5 Natural Resource Management (NRM)

Introduction
Increased productivity in agriculture and more effective management of natural resources are central to alleviating poverty and food insecurity, in particular in the poorest countries. Natural Resource Management (NRM) is intended to provide integrative approaches to management at a higher organizational level than just the crop. It is quite properly concerned with the steps from crop to farm to landscape and from the current season to extend over the indefinite future period implied by the term 'sustainable'. It offers the means to cope with the effects of uncertainty about inputs (variability) on the values of outputs. Put concisely, NRM at CIP involves characterizing the sustainability of targeted agro-ecosystems, examining external disturbances of targeted agro-ecosystems, and designing and validating resilient agro-ecosystems.

NRM was given strong support in the 2002 EPMR from which there was a recommendation that "a priority setting exercise be conducted for NRM, … to help focus the research agenda and develop a proper balance between process oriented and application oriented research, and between production systems based on CIP mandate crops on the one hand and livestock-pasture-based production systems on the other hand". In the Section 'Assessment' we will consider whether that has been achieved. The NRM-recently experienced CCER is also discussed.

Current Strategy and Overview

Just as the better management of a crop involves an integrated approach to tackling all the crop issues together, with the solution to each problem being sensitive to its potential effects on other problems, so the better management of land requires an integrated approach to its use. In modern land use we are aware that the issues that must be considered are wide and all-embracing. NRM aims to provide the means to consider all the relevant issues affecting land use and cropping for a specified area with factors ranging from weather, its variability and possible changes, through soil, its nature and its susceptibility to degradation, to socio-economic influences.

Given that task and that background, the science of NRM is strongly focused on the means to acquire information, largely quantitative data, and on the means to manage that data including systems analysis in order to permit its reliable analysis and to enable its robust interpretation. Applications include soil-crop-nutrient modeling, quantitative methods to assess the impacts of operations on the environment, forms of decision support, climatic interpolation models, and fractal models for up-scaling and down-scaling spatial data. It may also be required to cover human actions. Given the range of techniques that are available to scientists working within NRM the application of their skills can go wider than land-use and deeper; wider, to cover animal husbandry; and deeper, to offer understanding of component parts such as soils, roots, and nutrition.

Being consistent with the mandate crops, at CIP, the larger number of NRM studies concern systems that include potato or sweet potato but they are not confined to these crops. The multiplicity of the relevant variables means that initially at least studies and their outputs are site-specific. The translation of such studies to wider relevance and to the status of IPGs requires a second stage of development and further data management.

The current structure within the Project is based on 'Outputs' described in the MTP 2007 – 2009 (*Medium-Term Plan 2007 – 2009*, p. 19) - Changes from the previous two years were simply to modify the targeted regions. Foreseen changes (M*edium-Term Plan 2008 – 2010*, p. 7) clarify the methods to be used (OP1), give emphasis to the results of the work (OP2), and modify the emphasis (OP3). The declared 'Outputs' indicate classes of problem to be tackled, methods likely to be used, and the relevant geographic areas. Particular crops, or other biological types, are not specified.

As will be discussed under 'Achievements' it is increasingly important for collaboration between Projects. Project 3 producing genotypes with putatively desired characters, Project 4 taking an integrative approach to their possible management, and Project 5 providing the means to reconcile the information from the other two Projects with the information which characterizes the many candidate regions. We understand that some such collaboration is planned. We recommend that the plans are brought to fruition.

There is regional involvement with NRS staff in SEA with feeding swine (sweet-potato); in India & Bangladesh; in Bolivia; and in Puno, Peru; and also with an IRS scientist in Nairobi.

Main achievements

The project has developed a sound knowledge of CIP's mandate crops and their systems. It has then taken that knowledge and used it in the development of modeling approaches to the understanding of these crops and of the cropping systems by combining their expertise in physiology, modeling, systems theory and analysis. It is a characteristic of models that the meta-data required differs between those addressing differing scales of organization and with differing applications. The scientists in this project have tested models from elsewhere and in some cases they have adapted them to their own purposes. In other cases, the larger number, they have developed their own.

Cases in point can be found in their work on linkages with commodity research. Some publicly available models, such as DSSAT for crop simulation and TRADEOFF for system analysis, were too sophisticated and did not work well in the circumstances in which they were being applied. The NRM team has developed its own alternatives with simpler inputs that work better.

Modeling is based on knowledge and understanding and where elements of either of these are missing then the modeler has to collaborate with colleagues to obtain these things. The NRM Project has developed a controlled environment facility where it can conduct experimental investigations into features of the mandate crops to provide the knowledge and understanding that will advance some of their models and widen their applicability. That facility could be used to enhance collaborative work with both of Projects 3 and 4.

A significant part of planning to manage resources for sustainability at the landscape level is the ability to understand risk. Examples of such risks are deviations from historical mean climate patterns (whether these deviations have occurred previously or are unprecedented). Understanding these provides increased realism in simulation modeling and can aid down-scaling from Global Circulation models. The NRM team has been engaged in characterizing multiple shock events: droughts, frosts, floods, hail, snow, over successive years. Equally relevant understands people's perceptions of risk which will modify their responses to opportunities. The NRM team has provided several studies of this nature.

The model LIFE-SIM provides a simulation of livestock feeding strategies and for the purposes of this EPMR it provides an excellent example of how studies at a level wider than the mandate crops can then be highly relevant to these. LIFE-SIM is itself an integration of several sub-models for different animals that had been used in several workshops to assess year-round feeding strategies in small-holder livestock systems. The sweet potato can be an important component of the feeds provided by such a small-holder. A development of that model is now being used to increase productivity of a current collaborative programed on swine-feeding in Vietnam using sweet potato and other vegetation by informing the evaluation of sweet potato clones with widely differing harvest indices.

Members of the NRM team have provided increased understanding at both the macro-scale and the micro-scale. Examples of the former are seen in its studies on atmospheric transmissivity in the Andes and on the interaction between precipitation patterns and land-use in Tibet. Examples of the latter are provided by the work to characterize soil pore systems – with relevance to the

movement of water in soil – and the still current work developing electrical tomography to represent and develop understanding of influences on roots.

An example of the team's experience in integrated assessment of human-natural systems is seen in their collaborative study of causes of environmental degradation in the Altiplano of Peru with the key output that environmental degradation is not necessarily attributable to the poor.

Another important achievement at the field scale and upwards has been the development of field methods to detect PYW using remote sensing. Further work to expand coverage by using an airborne camera should lead to a positive outcome.

An important component of the work of the NRM team is Environmental Vulnerability Assessment (EVA) which effectively means by how many the causal variables can be altered before there is a significant change in the response variable. An example of that was an evaluation of the sensitivity of local market farmers to achieved yields and the costs of production which indicated a lower threshold for economically sustainable yield and an upper threshold for acceptable costs of production.

Resources

Project 5 has operated on an annual budget of approximately US$ 2.5M of which 80 – 90% has been 'restricted' funding and the core funding has amounted to ca. US$ 100 – 150k. Apparently the success rate in winning external funding has been around 40 – 50% over the last five years which is a creditable performance.

We note from the MTP 2008 – 2010 that the project expenditure between the regions will change over the period so that expenditure attributed to LAC will decline from 79% in 2006 to 69% in 2010. The other three regions will have slightly increasing shares: SSA (5%), Asia (3%), CWANA (2%). The ability of the Centre to define its research agenda in this project is expected to change substantially in the near future, since it will become more dependent on restricted funding.

In early 2007 (CCER report), scientific staff in NRM numbered 13 plus a consultant and one more appointed jointly by CIP and PROINPA, Bolivia. There were a further six technical staff and three in charge of regional field work. Between them, these staff represent a wide range of expertise including: simulation modeling, soil science, farming systems, agronomy and physiology, physics, meteorology, economics, mathematics, remote sensing, and IT-GIS.

The project management feels the need for more senior staff (IRS). Currently there are 5, one in Africa and four in Lima. The projects need to operate as partnerships with local staff but they do also need first-hand local experience. An ideal target would be 2 in Africa, 2 in Asia and still retain 4 in Lima.

Assessment

As already mentioned, NRM was considered carefully in the 2002 EPMR Project 5, and was the subject of one specific recommendation, quoted in Section 3.5.1, that "a priority setting exercise be conducted for NRM …to develop a proper balance". Although natural resource management featured strongly in CIP's Visioning Exercise (*The CIP Vision – Preserving the Core, Stimulating Progress*, October 2004) yet we have not been able to find a statement, there or elsewhere, of the 'priority setting exercise' that was recommended for NRM by the 2002 EPMR.

Regarding the Science Council's question on whether clear impact pathways been developed for CIP's NRM research, CIP's Strategic Plan, first sets NRM in a global context and then in the context of CIP, where the considerable skills of CIP's NRM team are described. Finally, the outlook for NRM is considered over two paragraphs where it is declared that CIP will acquire additional modeling capability and it is recognized that one of the most immediate needs is to combine crop physiology with genomics to improve tools that better assess GxE interactions in order better to predict gene-to-phenotype relationships. This would involve collaboration between the three projects #3, #4, and #5. It is also foreseen in that publication that CIP will acquire, process and distribute high-resolution databases required for sub-national targeting and link these with process-based models and geospatial data to assist national agencies to improve the quality of national statistics on root crops and to offer the ability to forecast yields. In addition to that section, NRM receives a single mention in each of the chapters devoted to the four regions, LAC, SSA, SWCA, and ESEAP. The aims are admirable and, we are sure, achievable. Yet, that brief statement hardly constitutes the 'clear impact pathway' that was sought.

The CCER done in February 2007 was conducted by people who were themselves, NRM scientists. This meant that they had a deeper understanding than most people of the issues involved, both in the work and in the matter of fund-raising. We make a plea that in preparing its priority setting exercise and its 'conceptual framework', CIP, and within it the NRM project, couples clarity of words and meaning with its clarity of vision. The Panel's reactions to the recommendations of the 2007 NRM CCER are described in detail in Annex 8.)

Turning to what has been achieved by the project it is possible to answer the question from the Science Council on what is the value added (global impact vs. local relevance) of CIP's research on NRM. Because the Division is heavily dependent upon 'restricted' funding it may consider that it has to apply its skills to a wider range of crops than are in the core of CIP's remit in order to thrive. And, in consequence, the Science Council may question the relevance of part of the work. However, NRM studies are typically site-specific. Therefore, the Project should aim to choose sites for study that include potatoes or sweet-potatoes. This would be more easily justified had NRM prepared a 'Road Map' as recommended by the 2002 EPMR.

Several instances named in the 'Achievements' section show that NRM approaches provide solutions that can be re-scaled. A model is be prepared that treats the nutrition of grazing animals and it can then be adapted to treat housed animals. It may deal with a few species and be modified to treat yet another. A study may model the influences on the profitability of a small farmer of a specific crop and then be transportable to another region or modifiable for another crop or eventually for the diversity of crops on a farm. As a general principle: Where the science is good it also has a wider applicability.

The Science Council should be reassured that the work being done by the NRM Project is worthwhile. However, the intellectual sophistication of the outputs is such that most of the anticipated outcomes will come from transferring the models, in the widest sense, to research partners or, conceivably, to government or local authority agencies or policy makers. The Project does undertake such work in mentoring workshops which can carry the output to NARS, for example. However, it may take further work of the 'outreach'-type properly to inform the advisors of policy-makers.

It is reported that the outputs from Project 5 over the period under review included sixteen scientific papers (all but one in peer-reviewed journal; most of them international, two 'regional' in Spanish) and an abstract, twenty-six other publications, a CD-ROM in Spanish, and thirty-six scientific presentations. The 'other publications included PhD thesis, Course manual, four book chapters, five working papers, and fifteen articles in conference proceedings. CIP staff was the senior authors or a significant author in most of the scientific papers. A further ten papers have been submitted for publication.

The Panel has not assessed that quantity of material directly. However, a list of key outputs was provided and the Panel has read all of these (nine), and provided its assessments and comments. The Panel is glad to see this level of publication, which indicates that the NRM project has responded to Recommendation 10 of the 2002 EPMR to produce more frequent publications in refereed journals and set more demanding annual publication performance targets.

It is widely recognized that drought or, at least water-stress is the abiotic factor that possibly presents the most serious and common depression of yield. In the course of the field visits drought was cited by growers as a major reason for loss of yield and for a switch from profit to loss. CIP staff has the opportunity to investigate options for drought avoidance and tolerance through collaboration between Project 5 and Project 4, Output 2 and Project 3, Outputs 1 and 3.

Two essential steps in the development of a potato crop are the process of tuber initiation followed by tuber filling. The timing of tuber initiation and the period from then until crop maturity are influenced by an interaction between temperature and photoperiod. This feature of the potato can be among the factors responsible for a poor uptake of new cultivars in the regions targeted by CIP. That is, genotypes may be well suited under the conditions in which they were bred but yet not well suited in their intended destination. This is another problem that could usefully investigated by collaboration with Project 4, Output 2, and Project 3, Outputs 1 and 3.

The task for NRM would be to incorporate the best understanding of the influence of the interaction between temperature and length of day on the timing, rate, and extent of tuber initiation into models of the potato crop together with options to specify 'maturity class' could assist in the defining the specification of genotypes best suited to particular regions and could enhance the breeding and selection of such genotypes.

In this example, more than in most, it would be very important to involve the destination region in testing the characterization of a candidate new genetic line; another example where collaboration between headquarters and regions is essential.

Recommendation # 9

Because the Panel analyzed the Terms of Reference of the 2007 NRM CCER, and is of the opinion that they were designed to shed light on CIP's options and means of addressing recommendation # 3 of the Center's 2002 EPMR, and because the Panel studied the report of the review, ***the Panel recommends*** that: (1) CIP implement Recommendations 1 to 6, and Recommendation 8; (2) CIP implement Recommendation 7, with reservations; and (3) CIP not implement Recommendations 9 and 10 of the 2007 NRM CCER, unless these actions are dictated by the priority-setting exercise. (The Panel's reactions to the recommendations of the 2007 NRM CCER are described in detail in Annex 8.)

Recommendation # 10

Because the development of greater synergies between CIP's commodity research and its NRM work would be likely to strengthen the overall coherence of CIP's research agenda, and given the

need for CIP to improve the focus of its NRM research agenda and to define impact pathways to NRM research outputs, ***the Panel recommends*** that: (1) CIP use the 2007 NRM CCER's analysis and recommendations, and the Panel's reactions to them, as inputs to conduct a sound priority setting exercise, as recommended by the 2002 EPMR; and (2) CIP initiate that exercise without further delay.

3.7 Project 6 Agriculture and Health (A&H)

Introduction

The younger sister among CIP´s research Divisions, and reported as an MTP project, A&H was put together as one result of the Center's Visioning Exercise, in order to address the need to put greater emphasis on agriculture-health linkages, and related challenges such as crop bio-fortification and reduction in pesticide exposure. The creation of A&H was based on the premise that, historically, the areas of agriculture and human health have been compartmentalized, both in research and in development efforts. Thus, A&H's envisaged logic runs as follows: New and appropriate technologies bring up opportunities to enhance human health through agricultural interventions on the one hand; but on the other, agricultural interventions can minimize the risks to human health. For this logic to be applied successfully a "decompartmentalization is needed, which explains the dual purpose of the A&H Division of searching for ways to increasing health benefits of agriculture (primarily nutritional), and decreasing health risks from agriculture (food and occupational/environmental safety). The overall objective of A&H is "to create and institutionalize a trans-disciplinary research team to generate understanding on the human health, environmental and economic impacts of agricultural production technologies in target systems as an input to designing healthy, sustainable agricultural production systems".

Strategy and Overview

Reducing pesticide exposure risk to farm families is approached from competing paradigms. The predominant one, promoted by industry, is the 'safe management' philosophy, placing the blame for unsafe management to farmers. The approach is to teach them better handling, preparation, application, clean up and storage practices. But potato farmers continue to use highly toxic pesticides in conditions where safe management is not practical or very expensive. The effective policy intervention identified by CIP and others is the prohibition on use of highly toxic pesticides. The irony of all of this is that while many potato communities around the world rely heavily on pesticides to protect their crop, some times with twenty or more applications, CIP has available clones with some resistance to common potato pests (late blight in first place) that promise reducing pesticide application by at least half. In addition, through its Farmer Field Schools for output mobilization, CIP has shown in many parts of the world that pesticide use can be reduced from 12 to 7 applications (up to 60% less active ingredients by area) without affecting crop yields.

There is little information concerning the nutritional composition of Andean roots and tubers, and while it is well-known that potatoes and sweet potatoes are valuable sources of quality protein, vitamins and minerals, there is limited understanding of the contribution that these crops make to the nutrition of rural families; an issue that certainly warrants CIP's attention. The emblematic case regarding nutrition has been the vitamin A-rich orange-fleshed sweet potato (OFSP), and CIP´s efforts to introduce the crop in production systems of SSA through the VITAA partnership. The potential for uptake and impact is huge. Approximately nine hundred thousand hectares of sweet potatoes, well adapted to local growing conditions and consumer preferences -- mostly high-starch, low sugar, white or cream-colored landraces – are planted in just three

countries (Kenya, Uganda and Tanzania). Because the high content of beta-carotene in the OFSP, the recommended daily allowance of vitamin A can be obtained by consuming just 100 grams. CIP's challenge is to develop OFSP varieties adapted to local conditions and consumer preferences in those countries.

Resources

Human and financial resources for the A&H Division are quite modest:

- Small *staff* including IRS (a community medicine specialist & epidemiologist (part-time) – new 2007 - a human nutritionist, and a social anthropologist shared with UH), and NRS.
- Funding comes from restricted grants e.g. IDRC & CIDA, and partnerships e.g. Harvest Plus.
- The MTP 2008-2010 shows an actual 2006 budget of US$339 thousand.
- A&H is the smallest Division in the Center's current organizational structure. The imbalance is evident when compared with the other Divisions: Its 2006 annual budget was 7.4% of the average for the other five Divisions (US$4.6 per Division).

Main Achievements

CIP´s current scientific achievements in this area are very promising and there is potential for much more with CIP's increased capacity to enhance micronutrient contents using near-infrared methods. A&H mentions the following as main achievements:

- Carotenoid characterization and Biofortification work by Germplasm Enhancement & Crop Improvement colleagues;
- child nutrition improvements associated with orange-fleshed sweet potato (OFSP) consumption Sub-Saharan Africa (SSA) (VITAA);
- improved agro-ecosystem management to improve human health (TOA and Ecosalud) through NRM and EcoSalud II linked with Papa Andina Initiative; and
- Fifty landraces of OFSP collected in SAA, and their evaluation initiated (one OFSP clone (CIP 19906.12) close to being released in Uganda, Kenya and Tanzania, and others are in final evaluation in Mozambique and Ethiopia. Some of these materials have revealed that SP can be a significant source of Fe and Zn.)

The Panel notes that, from the perspective of IPG research outputs, the achievements mentioned above are results that have been produced by two other research Divisions: Germplasm Enhancement and Crop Improvement, and Integrated Crop Management (Farmer Field Schools).

In the MTP 2007-09 two outputs are reported for A&H: (1) Integrated health and agriculture strategies to reduce pesticide exposure risks; and (2) importance of safe and healthy roots and tubers. For output 1, of the A&H Division, five flag publications have been reported:

- Relationships among production systems, preschool nutritional status, and pesticide-related toxicity in seven Ecuadorian communities (reported as well for the Urban Harvest project);
- Pesticide use in commercial potato production: Reflections on research and interventions efforts towards greater ecosystems health in Northern Ecuador;
- Pesticides and health in highland Ecuadorian potato production: Assessing impacts and developing responses;
- Cultural encounters: Learning from cross-disciplinary science and development practice in ecosystem health; and
- Persistent organic pollutants and hazardous pesticides in Andean farming communities in Peru.

These publications are basically field studies related to pesticide use and ecosystem health, and provide important information for public health authorities in their efforts to reduce the use of hazardous pesticide and create awareness of the dangers of misuse. But for the Panel, the relevant question is about CIP's comparative advantages for that kind of research. A serious research work in the area of ecosystem and human health would need to go beyond potato and sweet potatoes encompassing specific expertise beyond that of CIP.

Assessment

Science Council concerns about A&H have been related to the IPG nature of this project's expected achievements (outputs), and to whether CIP has a comparative advantage for research in the area of human health related to pesticide use. The Panel has no doubts about CIP's comparative advantages to produce more nutritious potato and sweet potato materials and/or in generating technologies to reduce pesticide application via breeding for resistance to pests in the first place, and via integrated crop management in the second. In fact, these are essential research outputs of two other research Divisions.

But the Panel believes that CIP should not do research on pesticide use and ecosystem and human health at large. Notwithstanding the desirability of collaborative research in support of projects like Ecosalud in Ecuador, it is the ICM Division, with inputs from GECI Division that has the responsibility to look for good agronomic practices to reduce potato pesticide application.
The relevant question then regards the added value of A&H under these circumstances.

The goal of "decompartmentalization" and the needed trans-disciplinary research to integrate agriculture and human health is not an IPG in and of itself. It is an approach for research and development that should be incorporated at the level of country programs and partnerships, to make sure those synergies between bio-fortification, pest resistance, and improved crop management result in greater benefits than those of these three agriculture-human health components taken in isolation. If opportunities for IPGs are envisaged to facilitate the implementation of the approach, then joint-outputs could be planned and developed under the responsibility of CIP's other research Divisions.

Recommendation # 11

Because CIP needs to concentrate on fulfilling its mission, by developing disease/pest resistant and more nutritious potato and sweet potato varieties, as well as complementary crop protection and management practices, and because it needs to promote more integration among the Research Divisions responsible for the Center's research outputs, ***the Panel recommends*** that: (1) the Agriculture and Health Division be phased out; more specifically, that agricultural-health interface activities (crop breeding for bio-fortification, reduction of pesticide exposure and the needed trans-disciplinary research to integrate agriculture and health) be carried out through joint research activities and promotion of partnerships (for output mobilization) under the leadership of CIP's other Research Divisions; and (2) CIP agrees the terms of the recommended "phasing out" with all concerned parties, taking into account projects underway and people involved.

3.8 SWEPs at CIP: Assessment and Recommendations

Introduction

CIP's diverse partnerships have taken the Centre to become involved in eleven SWEPs, including those convened by the Centre: (1) CONDESAN (*Consorcio para el Desarrollo Sostenible de la Eco-*

región Andina), a consortium for the sustainable development of the Andes; (2) the Global Mountain Program (GMP) that aims to promote synergies through sharing and application of knowledge on sustainable agriculture and integrated natural resource management in mountainous regions; and (3) Urban Harvest (UH), that aims to direct and coordinate the collective knowledge and technologies of CGIAR Centres towards strengthening urban and peri-urban agriculture. CONDESAN and GMP are part of CIP's NRM program, and UH basically carries CIP's Urban and Peri–Urban Agriculture program. CIP's role as host of several SWEPS originated from its early development of solid convening skills through its networking in several regions and countries. According to Science Council comments on CIP's 2007-2009 MTP, all CIP's convening SWEPs appear relevant for the CGIAR. Although this may be the case, the Panel's view is that they do no appear to be of any significant relevance for CIP's mission.

This Panel has limited the extent of its review of these three SWEPs to what it has considered necessary to evaluate the benefits that each of these programs has brought to CIP's research portfolio. In its review, the Panel uses basically two criteria for the evaluation: (1) whether research products from the SWEP complement CIP´s main research OUTPUTS; and (2) whether the SWEP contributes to the CGIAR system priorities. Background, strategy and main achievements for each SWEP are provided in Annex 12. This Panel's assessment and recommendations for the three SWEPs are presented in the sections that follow.

Project 7 CONDESAN

CONDESAN can be truly considered as an OUTPUT of CIP. Indeed, CONDESAN is an "institutional output" that put together a powerful platform to address the problems of natural resources management in the Andes. Created as a consortium in 1993, in 1997 CIP requested the CGIAR to recognize CONDESAN as an eco-regional program. From 2002 to 2005, six topics integrated the CONDESAN "research" agenda: (1) Soils and water management; (2) agro-biodiversity in Andean root and tubers; (3) improved farming system for the Andes; (4) policy research; (5) capacity building; and (6) enhancing communications through InfoAndina. The results of this "research", based on a benchmark-sites approach, may be useful for changing conditions at specific locations in the Andes.

But because the scaling up of the accumulated knowledge – partly from CIP' outputs, but mainly from research of CONDESAN's other partners – was considered to have had limited results, while having great potential, CONDESAN recently decided that the benchmark-sites approach had to be abandoned, and that the two pillars of its strategy should be: (1) integrated water resource management and (2) innovative farming systems. With this new approach the 2002 EPMR recommendation that "all CIP scientists ... work together in the CONDESAN benchmark watersheds and use the CONDESAN mechanism for the development, evaluation, dissemination of integrated technologies, and policy and management recommendations", fell apart.

Benchmark sites in the Andean Ecoregion used to be selected because they represent a "typical" location within an important Andean ecology. These ecosystems are under threat due to unsustainable human activity, and hence explain the pervasive relation between resource degradation and poverty. Undertaking research and generating knowledge about the issues that can change poverty and resource degradation in these environments was thought to be most needed; thus a justification for the work of CONDESAN and its local partners.

The Board of CONDESAN has expressed its appreciation for CIP's inputs towards a CONDESAN Road Map, which focuses now on Water Resources Management and Innovation Systems. The Road Map clearly provides the directions for CONDESAN research and development work in these two areas. However, the Board of CONDESAN recognizes that the Road Map has not yet materialized into concrete research.

CONDESAN has been a prolific publisher. Since 2002 more than fifty publications have been released, in printed or in electronic form. They include books and book chapters, articles, posters, flyers, and CD ROM. The Panel reviewed them and found the quality of the material to be good in general. Yet, the outputs, including CIP's, to which these publications relate, are not evident, and there is not enough clarity about what the expected audience is. In the Panel's opinion, CIP has very little to contribute to the main pillars of the new CONDESAN Road Map.

CIP claims that all the 2002 EPMR recommendations with respect to CONDESAN have been fulfilled. But this Panel sees no evidence that between 2002 and 2006 CONDESAN's work has increased its contribution to CIP's mainstream research and output mobilization initiatives, not even to CIP's NRM research or Papa Andina's output mobilization.

In conclusion, regardless of whether CONDESAN has or has not been successful in developing fruitful partnerships, in generating relevant knowledge, and in contributing to better policies, its work has not been done in any significant relation with CIP's research or with the mobilization of CIP's outputs. What the Panel sees instead is that CIP has used the CONDESAN mechanism to a very limited extent, and that as a result, both CONDESAN and CIP have lost an opportunity for relevant research outputs and a more effective output mobilization for the Centre. Thus, financial considerations notwithstanding, the Panel strongly questions the benefits for CIP as CONDESAN's convening Centre.

In addition, the Panel sees that this SWEP has little or no capacity to undertake research on the selected Road Map areas. Perhaps the "exit" for CONDESAN in this respect will be to contract-out this research with alternative suppliers. However, the Panel would like to point out that CONDESAN is indeed very valuable as a platform and partnership concerned with natural resources management in the Andes, and should play an important role in the future vis-à-vis the work of NARS and regional organizations, including CAN *(Comunidad Andina de Naciones*) and CAF (*Corporación Andina de Fomento*) to promote the sustainable development of the Andes.

Recommendation # 12
Because CONDESAN and CIP have no extant, significant and fruitful working relations, in spite of strong previous recommendations on this regard, CONDESAN is no longer contributing to CIP's research outputs. Furthermore, current CONDESAN achievements are due mainly to its own efforts. Therefore, ***the Panel recommends*** that: (1) CIP disengages from convening CONDESAN; (2) the Board of CONDESAN, the Head of the Coordination Unit, and CIP, in coordination with the Alliance, discusses and agree on the exit strategy, and define a working plan for a three-year transition period; and (3) this working plan addresses the financial repercussions for CONDESAN and CIP.

Project 8 Global Mountain Program (GMP)
The Global Mountain Program is a SWEP that promotes CGIAR action in support to agenda 21, chapters 13 and 14, on sustainable mountain development. In CIP´s previous "project" research structure, this program was originally part of the Center's "Integrated Natural Resource

Management in Mountain Agro-ecosystem project". When in 2004 the NRM Division was created, CONDESAN and GMP were pulled out from CIP's research projects.

The GMP's mission is basically about linking research with development, and searching for information and models that planners and policy makers can use to promote development in mountain ecosystems. Its work was planned to be done mainly by gathering technologies produced by CGIAR Centres, acting as an umbrella organization for that purpose, and then making them available to mountain peoples. A benchmark site was proposed (developed) for the rural/urban linkage area.

But because these technologies are often not adapted to mountain environments, and plans for their testing have not yet been clearly outlined, adoption of GMP's technology "offers" has been low. Furthermore, policy frameworks developed by GMP for sustainable mountain development have not been effective in influencing governments. Science Council comments on CIP´s 2007–2009 MTP stated that the GMP´s output targets were not defined in sufficient detail and did not appear in those of partner Centres´ either. And GMP's financial prospects do not appear to be healthy either. Funding for the program is expected to decline from US$0.4 in 2006 to a planned level of less than US$ 0.3 in the coming years.

In sum, due to the above reasons, the level of contribution of the GMP to CIP's research outputs is small, and so is its value to mobilize the Center's main outputs.

Recommendation # 13

Because, since its creation in 1997, the GMP has concentrated on addressing policies, understanding processes, and analyzing technology "offers" from CGIAR for mountain people, the Program makes a negligible contribution to CIP's core research outputs. Therefore, ***the Panel recommends*** that: (1) CIP disengages as the convening Centre for the GM; (2) the Board of the GMP and CIP, in coordination with the Alliance, discuss and agree on an exit strategy and a working plan for a transition period; and (3) this working plan address the financial repercussions for the GMP and CIP.

Project 9 Urban Harvest (UH)

Urban and peri-urban agriculture was a recommendation from the 1998 Third CGIAR System Review made, among others, in the context of a special collaborative focus on Africa: "Develop research programs in urban and peri-urban agriculture in cooperation with relevant organizations, including AVRDC". UH, originally called the System Initiative for Urban and Peri-urban Agriculture (SIUPA), was formed in 1999 and approved as a SWEP by TAC.

In an attempt to validate this "would be IPG-research theme", the Centre Vision exercise selected Slum Dwellers as one of the MDG targets to be incorporated formally into CIP's research portfolio. The consultation among CIP's stakeholders had given 66% of approval to this particular MDG target. It was post 05, with the new System Priorities (SPs), that the SC decided not to recognize UH as a CGIAR system business. According to the Science Council, the continuation of UH should be considered part of the twenty percent of the system's resources spent on non-agenda research.

A further comment by the Science Council to CIP's 2007-2009 MTP expressed that "the UH program plan is improved with an adequate IPG research agenda, and it seems that sufficient and appropriate networks and individual R&D centres have been identified to implement it".

While in the 2007-2009 MTP the UH program reported most of cost allocation to SP 5A, in the 2008-2010 MTP its entire budget is under "new research areas".

UH reports the establishment of R&D "anchor sites" and "contact cities" in South East Asia and SSA, following basically two approaches for developing IPGs. The first is to focus on the testing and validation of strategies, frameworks and methods (which are UH's major types of outputs) in multiple sites, after they have been developed initially in a single or sometimes in two sites. The second is to carry out "meta" evaluations of similar output targets from sites in different regions. Last Center's MTP reports three outputs: Innovative technologies and practices developed for increasing productivity and marketing, methods developed to enhance the safety and sustainability, and policy options and institutional and planning strategies. The Panel has not found evidence of sound research on these themes.

In the Panel's opinion there are at least two important considerations regarding UH and its convening by CIP. The first one, also discussed in Chapter 2, is in regard to the whole idea of allocating CG System resources to the "slum dwellers" MDG target, regardless of whether the associated research could be of an IPG nature. The second consideration is whether in fact research conducted so far by the Urban Harvest program is yielding significant IPGs related to CIP's core business, and whether CIP has a comparative advantage in undertaking such research.

Since most of the poor people of the world still lives in rural areas, and the accomplishment of CGIAR goals is still far down the road, due to the formidable challenges ahead and to limited financial resources to solve the world's agricultural problems, logic dictates the need to concentrate CGIAR activities in the rural sector of developing countries.

The Panel's analysis of achievements/outputs and publications from the Urban Harvest program, reveals that most of the knowledge and information generated, despite its value for urban planners and organizations concerned with urban livelihoods, is of specific importance for particular socioeconomic situations in particular sites. The proposed "meta" evaluation of similar output targets from sites in different regions has yet to be seen. The Panel has no doubt that some lessons and methodologies produced by Urban Harvest may be of an IPG nature, but more as a by-product. In their field visits (Hanoi and Kampala) the members of the Panel found no evidence of concrete work by UH.

Furthermore, the Panel believes that the initiative on "Sustainable and healthy horticulture in and around cities", proposed in the Center's Strategic Plan, is outside CIP´s comparative advantage and this involvement would certainly drain CIP's scarce human and financial resources diffusing its research agenda even further. The Panel believes that today there is the need for a sustainable global food chain and world's natural resources are under survival stress. The CGIAR is still the best instrument to propel resolving the world's agricultural problems, and its Centres best equipped to provide needed agricultural technologies.

Recommendation # 14

Because the research challenges to improve the livelihood of poor potato and sweet potato farmers are still of great importance for CIP, working to alleviate the poverty of poor urban dwellers distracts CIP's resources away from the rural poor. Furthermore, the Urban Harvest Program is neither complementing CIP's main outputs nor addressing the CGIAR System Priorities, as expected from SWEPs. Therefore, ***the Panel recommends*** that: (1) CIP disengages from being the convening Centre for the Urban Harvest SWEP; (2) CIP set the terms of

disengagement in coordination with the Alliance; and that CIP assure donors to this Program that CIP will carry on its responsibilities until the completion of current project activities.

4 CROSSCUTTING ISSUES

4.1 CGIAR System Priorities: Implications for CIP

Introduction

The CGIAR's two-pronged approach to contributing to the reduction of poverty while simultaneously improving food security has raised some debate within the academic community. The original CGIAR mission had been strategically focused on increasing "the pile of rice on the plates of consumers short on food".

The 5th CIP EPMR Panel expressed its concern at the new approach, as noted in Chapter 1, 1.2 Increased Demands from the Donors, in that Report. We quote:

"This increase in demands on the CG System violates a cardinal principle of policy making, which is that to be effective there must be one policy instrument for each policy goal" and also,

"There are few technological fixes that will significantly raise the income of small farmers".

These concerns were not only academic; they were also related to eventual CIP performance evaluation on the broader new goals, which the Centre would be ill-equipped to achieve due to insufficient tools and policy instruments.

The Science Council responded to the 2002 EPMR Report concerns in a commentary:

> "Agricultural research as a policy instrument is multidimensional. It is the challenge of the CGIAR to find win-win solutions that will advance the three goals: increasing food production, alleviating (rural) poverty and maintaining the sustainability of natural resources."

The technological fix concept refers to the idea that all problems (including social problems) may have technological solutions. In his 1988 book *Society and Technological Change*, Rudi Volti, says: "Americans in particular have often seen technological progress as the surest basis for progress in general, and have tended to believe that technological solutions to problems are less painful than solutions that require political or social changes". The CGIAR appears to share this philosophy. Rural poverty as a social problem consists of a problem mix that may contain some elements that can possibly be resolved by a technological fix. But the solution is always partial. Even the CGIAR does not claim to have a complete solution to the problem of rural poverty; it only contributes to a solution.

We understand both, the apprehensions of the 2002 EPMR Panel and the Science Council commentary, but would like to add that the win-win solutions found around the world – many of them with CGIAR interventions— no doubt came about with the concurrence of many factors beyond the scope of agricultural research such as rural roads, credit and effective extension efforts, among others. (See also the section on Attribution in Chapter 1.)

The Need for System Priorities

The Science Council's recent document, **System Priorities for CGIAR Research 2005-2015**, explicitly recognizes that CGIAR initiatives may have little impact in adverse policy and institutional environments; it stresses the need for policy research to understand and eliminate such shortcomings; and suggests the need for CGIAR to lobby and advocate to bring about

appropriate, supporting environments through investment in rural infrastructure, delivery systems, and other such developmental activity. Lobbying was common practice in earlier CGIAR days, when Norman Borlaug's and others' beat artlessly took him from the wheat fields to ministerial offices.

Several trends that developed in the CG Centres between 1998 and 2002, including stagnant funding, and a mix of research activities not reflecting the CGIAR's comparative advantages, have conspired to create a CG System marked by declining influence of independent scientific advisors (traditionally provided by TAC and later by the Science Council); a concurrent systemic transformation, from a science-driven agenda to one that is donor-driven; and a shift from the production of IPGs to provision of national and local services.

In 2002 the Executive Council (ExCo) requested that the Science Council initiate a process to develop system-level priority setting in line with the CGIAR 2000 Vision and Mission.

Through an exhaustive Science Council-led process of participatory data collection —with the distinctive quality of being both analytical and broadly consultative with stakeholders, donors and scientists from the CG System and other research organizations including NARS— a set of twenty research priorities in five priority areas was developed.
These considered,

i. The potential impact to improve the livelihood of low-income people in developing countries, factoring in success probability,
ii. The international public-good nature of the research, and
iii. Alternative sources of research suppliers as well as CGIAR comparative advantage vs. such other sources.

The CG System research was now prioritized to contribute explicitly, directly and indirectly, to seven of the eight MDGs.

The new Science Council Document, approved by the Group in 2005, represents the CGIAR's most serious attempt to guide research with system-wide priorities; earlier agendas had included a strong component of aggregated Centre priorities. The new System Priorities encourage the Centres to make evolutionary not revolutionary changes in their science strategies. A three-year adjustment period (2006-08) has been proposed for program alignment by Centres through MTP planning and Science Council review. Following the transition period, the objective is that Centres allocate 80% of their budgets to the five priority areas. The proposal states as well that Centres can spend up to 20% of their budget outside the System Priorities and half of that for exploratory, innovative research work to develop new science and potential future priorities. Simultaneously, the Science Council recommends that donors provide funding for System Priorities in the future.

Implications for CIP

The Panel would like to stress several rather peculiar features of this new System Priorities document that, in its view, represents an important departure from earlier agendas, particularly its explicit focus on income generation among the rural poor.

It is widely known that poor farmers in developing countries obtain their income from many sources, including agriculture, off-farm employment, subsidies and in some countries, "remittances". Disregarding off-farm income and solely considering farm revenue, two factors

determine income level: the productivity of the land and the price received for its output. Hence, new, improved technology is just a third factor determining income.

But land and asset holdings in general are so minimal in most of the poor areas of the world, (often less than one hectare and a few animals), and formal education so negligible, that even in a best-case scenario where small farmers surmount all the above-mentioned constraints to adopt first-best technologies, and attain the economic benefits of improved productivity, the changes in income would be so small that rural poverty would not be significantly alleviated. In spite of this reality, numerous studies measuring the economic benefits to the poor from those "small changes" brought about by improved technologies indicate that they are worth pursuing, possibly due to better nutrition and opportunities spilling over off-farm income generating activities. A recent analysis made by CIP (Fuglie 2007) suggests, if CIP maintains current levels of research and extension, its research on potatoes and sweet potatoes will likely deliver significant economic, employment, health and other benefits for the rural poor by year 2020.

The emphasis of the new System Priorities on collaborative research on high-value fruits and vegetables, and inclusion of livestock, fish and tree products as additional sources of income, is encouraging. Supporting diversification programs and other activities that might increase farmers' economic returns is an important strategic innovation.

In the Panel's opinion, the New System Priorities document can greatly affect CIP in at least three areas:

i. Wider scope now exists for agricultural research in biological / natural resource areas;
ii. a wider range of policy research topics is now open to the Centre; and
iii. Advocacy to bring about the appropriate supporting environment is encouraged.

In this new panorama, the Centre is no longer restricted to "technological fixes", and a new array of options represents research for development opportunities. In the opinion of the Panel, this should allow CIP to be better able to equip itself to tackle its mission.

Table 4.1 shows CIP project cost allocation percentages vs. CG System Priority Areas according to CIP's 2007-2009 MTP. Worthy of note is that CG Priority 5 receives 37% of total budget, the highest cost allocation. Despite this realignment of the CIP research portfolio to the CG System Priorities, the Science Council noted in its comments to the CIP MTP 2007-2009, that the CIP Plan does not reflect an effort to adjust its agenda in line with the System Priorities. As discussed in Chapter 2, the Panel believes that what this table reflects is a problem with the reporting of funds from restricted projects, and has made a recommendation in this regard.

An explanation given by CIP in the 2008-10 MTP is that in its 2007-2009 MTP the Centre adopted a "splitting" rather than a "lumping" philosophy for assigning its research to System Priorities (SPs), but that the 2008-2010 MTP guidelines counsel "lumping" so that assignments are focused on a reduced number of SPs. In its 2008-2010 MTP cost allocation to SPs, CIP reports for the first time three new budget lines beside those to SPs: stand-alone training, development activities and new research areas for Project 9, Urban Harvest. Due to the "lumping" approach, the Centre cost allocation to SP 5 now takes up around one fourth of total budget. Despite these changes in the reporting system, in the Panel's opinion the basic problem of inflated research budgets remains.

Table 4.1CIP´s Research Portfolio and CGIAR SPs

CG System Priority Area CIP Projects	P. Area1 %	P. Area2 %	P. Area3 %	p. Area4 %	P. Area5 %	% Total and by CIP Project
Project 1 Impact Enhancement	-	1.5	-	0.9	97.6	100 9.3
Project 2 Genetic Resource Conservation	100	-	-	-	-	100 5.0
Project 3 Germplasm Improvement	10.7	70.1	0.4	0.7	18.0	100 33.6
Project 4 Integrated Crop Management	0.7	21.0	22.6	19.1	36.6	100 21.3
Project 5 Natural Resource Management	-	12.0	0.6	56.5	30.9	100 11.1
Project 6 Agricultural Human Health	-	-	-	10.0	90.0	100 1.2
Project 7 CONDESAN	-	-	-	70.0	30.0	100 9.7
Project 8 Global Mountain Program	-	-	-	38.3	61.7	100 2.7
Project 9 Urban Harvest	-	-	11.9	11.8	76.3	100 6.0
TOTAL US$ by CG SP	1929	6463	1382	3910	8050	21734
TOTAL % by CG SP	8.9	29.8	6.3	18.0	37.0	100

4.2 Partnerships at CIP

Introduction

CIP has been partnering with other scientists and organizations from its inception, and has long-established empirical practices for engaging with partners. The Centre has developed excellent skills for networking and capacity building globally and regionally, and has gained a position as a "convening Centre". As noted by the 2002 EPMR, partnerships and capacity building are

important for CIP because they increase the Center's "efficiency" in the use of its resources (more and better research outputs), and because the Centre gains "effectiveness" in terms of end results (outcomes and impact).

After commending CIP for its efforts in this area, the 2002 EPMR recommended that the Centre "formulate a strategy for how to engage in different types of partnerships" to aid CIP in: (1) better clarification of reasons and objectives for entering partnerships (sharing and acquisition of expertise, technology development and dissemination, network launching); (2) selecting the appropriate partners ("boundary partners" for the case of outcomes); and (3) clarifying expectations of the partners and the conditions under which the partnership will be carried out (including CIP's exit strategies).

CIP reports that this recommendation has been implemented based on two changes: (1) the Restructuring of CIP research organization into Research Divisions and Partnership Programs, reflecting the strategy of creating and identifiable space for partners within the larger context of CIP; and (2) the Strategic Plan, which establishes the strategy for engaging in different types of partnerships in different stages of the developing cycle and for the different regions.

But in this Panel's view, besides providing a space for the identification of partnership programs, the new CIP´s research structure does not add any significant discussion to the formulation of a strategy for partnerships. At the general level, the Strategic Plan emphasizes the need and importance of partnerships both as innovation system components and as a way to operate the "linkages for dissemination" stage in CIP´s pro-poor R&D cycle. At the same time, the Strategic Plan also describes the envisaged characteristics of partnerships for each region, but fails to provide clear guidelines for entering in different type of partnerships. The Boxes, borrowed from CIP's Strategic Plan describe CIP´s general policy regarding partnerships, and the case of LAC as example.

CIP´S GENERAL POLICY FOR PARTNERSHIPS

Partnerships for Impact

Understanding potential or existing impact pathways related to CIP outputs will be part of its research agenda, which will include diagnosis studies and mapping the innovation systems in the areas of intervention and the design and assessment of inter-institutional projects oriented to identify the factors that make the pathway possible. This will include understanding platform formation and learning how to be part of them, how to create capacity building opportunities for CIP and its partners, how to be proactive in the platforms to respond to needs and opportunities with CIP products. The experience of the private sector will be useful for the purpose of research and development joint ventures.

CIP will access modern information technologies and use them for effective communication, dissemination of knowledge, and capacity building in potato and sweet potato innovation systems. CIP will also identify, acquire and utilize valuable technologies in the private sector with 'freedom to operate for the poor'. Capacity building activities will be used to facilitate the access of less developed countries to information and technologies.

CIP will utilize the knowledge it is acquiring through its engagement in participatory research to create development platforms that will assemble all the various actors involved in R&D of the specific target areas. Building these platforms and facing the managerial challenges they pose, are and will continue to be actively researched at CIP, making it explicit in the regional strategic and operational plans.

CIP´S PARTNERSHIP POLICY FOR LAC

Partnerships for impact

CIP has good working relationships and strong linkages with NARIs, NGOs and private sector partners in the Andean zone. This network of partners will facilitate scaling up its technologies. We will seek opportunities to concentrate a wide set of research activities and link them with partners that focus on diffusion. One such area in the Andean region will be around Lake Titicaca on the Peru-Bolivia border, one of the poorest spots in a poor region. Within each integration area CIP will build a strong multi-disciplinary team with the capability to engage stakeholders. Nevertheless, where good possibilities for impact exist outside of the priority integration areas CIP will also seek strategic partners that can provide linkages to uptake.

CIP's research Divisions will work closely with its partnership programs, other CGIAR centres, and other partners to achieve scaling up. CIP will look vigorously for funding opportunities to sustain scaling up in the Andes and achieve wider impacts. It is particularly important for CIP to enhance its credibility as a centre based in the Andes, through a strong presence making significant contributions to the MDGs.

Particularities of CIP´s partnerships

Acquisition/Sharing of Expertise Partnerships

CIP borrows and contributes to a global pool of knowledge. A difficult question is to determine which expertise the Centre needs that it does not have now, where to obtain it and how to pay for it in case the needed expertise requires contracting out. CIP currently collaborates with many research institutions and universities around the world. Each research Division has established different types of scientific collaboration, most of the times based on personal relations, either for sharing information in the domain of scientific knowledge as a public good, or through specific research contracts (out-sourcing). The more basic type of research - the production of IPGs or research outputs - is done at CIP headquarters in Peru, while the bulk of adaptation, validation and dissemination – moving from research outputs to outcomes – are done regionally.

Within this scheme of operation, CIP´s research Divisions have the responsibility to produce research outputs, many of which often require scientific collaboration or research contracts with third high level research organizations. The 2007-2009 MTP reports CIP´s research partners / collaborators (ARIS, NARIS and Universities) for the different Divisions indicating the research outputs to which a given partner contributes. Whether the quantity and quality of collaborators is the appropriate one is difficult of to determine, and the Panel has not been able to assess the optimality of this type of partnership at CIP. However, whether the Centre is taking appropriate advantages of the global pool of knowledge for acquisition of scientific information should be a very important research management issue involving funding, transaction costs and expected benefits. Constituting research teams that would cover all the required skills and expertise would be prohibitive even for the best-funded organizations. The Panel perceives that CIP needs to develop guidelines to facilitate this process of knowledge acquisition on the one hand, and needs to design criteria to evaluate the level of effort that different research Divisions devote to partnership development and coordination.

Network/Consortium Partnerships

Network/consortium partnerships are promoted by CIP usually at regional and global levels on issues transcending national borders. We believe that for this type of partnership CIP should clarify two basic factors before they are launched: first, the objective/nature of the network/consortium, and second, the Center's exit strategy.

The Panel has observed with concern that the ambit of some of these networks, including those that CIP convenes/hosts or sponsors, is quite broad, from applied research, to development activities, often beyond CIP's expertise and comparative advantages. The three CGIAR System Wide Programs that CIP currently hosts: CONDESAN, UH and Global Mountain share that same nature. The Science Council does not recognize UH as part of the CGIAR System Priorities, but the three System Wide Programs have been reported as CIP's research projects in the last MTPs. Examples of this same type of network/consortium, but in this case sponsored by CIP, are Papa Andina and UPWARD.

The Panel understands the need to develop partnerships to cover areas outside CIP's expertise, but only as a means to facilitate mobilization of the Center's main research outputs (potato/sweet potato technologies) into outcomes. These networks may be focused on enhancing the capabilities of the countries for a more sustainable and value-added potato/sweet potato production (clean seeds, better crop management, materials for processing), or on the development and use of methodologies for participatory research (including the gender perspective) to help CIP and NARS scientists in better designing potato/sweet potato technologies. Examples of these are PREPACE (Eastern and Central Africa), VITAA, and in the past PROCODEPA (Central America and México) and PROCIPA (Countries of Southern Cone of LAC). Consortia with more developed NARS such as India, Brazil, Argentina, and Chile are important to undertake joint research, and to promote research spillovers to third countries.

But, the Panel notes, the problem with some of these consortia for applied research and development on broad subjects is that sooner or later they drag the Centre into serving objectives and interests that are related marginally or not at all to CIP's core business. In many cases these networks may be doing a very important work for the beneficiaries in their respective areas, but this work may be no or little relevance for CIP. When this happens, the moment has arrived for the Centre to withdraw. In addition, because the other partners and stakeholders involved may wish to continue, even if CIP withdraws completely or just stops convening, CIP needs to think to ahead of time when and how it will exit, in order to allow the consortium to take steps to continue as a viable arrangement.

Technology Development and Dissemination Partnerships
In this type of partnership the potential partners are those involved in the process of technology development and transfer in the country concerned. They are usually the Ministry of Agriculture, NARSs, Agrarian Universities and Academies, farmer associations and/or ground level NGOs.

As discussed in the section on attribution in Chapter 1, CIP controls the generation of its own OUTPUTS but has little control over the needed changes in behavior to attain OUTCOMES in farmers´ fields. Without outcomes however, the Center's work is futile. CIP's partners are in a much better position to influencing the adoption of new technologies. CIP OUTPUTS – the IPGs are mostly "intermediate goods", which require various degrees of local development, adaptation and validation before they become "final goods", ready to be disseminated or incorporated into farming systems to result in OUTCOMES. Over time, they eventually attain large-scale adoption and sustainable benefits, and are able finally to influence IMPACTS.

Historically, CIP has invested heavily in collaborative partnerships within its "research partner for development approach" to build platforms to strengthen local research capacity and enabling the adaptation and dissemination of CIP IPGs, thus translating OUTPUTS into OUTCOMES.

In its early years, CIP stationed a sizeable share of its research staff regionally and in country initiatives to assist national partners in the technology development and dissemination stages, and to promote the testing and adaptation of CIP's technologies and methodologies such as (e.g. Virus detection methods, rapid seed multiplication techniques, TPS, the Participatory Market Change Approach, Farmer Field Schools, and Users' Perspectives in Research). Most of CIP IMPACT success stories have required significant public-sector subsidy (including specially funded donor projects) designed to scale-up technology dissemination in a country. Classical examples of success stories for CIP are: China, with the clean seed production systems and diffusion of CIP clones, at the time this country did not have access to other western materials (Achirana INTA with 250,000 has at one point); IPM in Indonesia; potato storage systems in India; and improved varieties in Costa Rica (Floresta) and Peru (Perricholi).

Country program partnerships play a very important role to speed-up both the adaptation of CIP's OUTPUTS to local conditions, and their dissemination into farmer fields. Field visits allowed the Panel to see how in Vietnam and Indonesia, country partnership programs are underway to promote the use of sweet potato-based feed (preserved through anaerobic fermentation) for pig production, and for linking potato farmers to markets. There are also plans to incorporate private commercial farmers into seed multiplication. This Panel would like to commend CIP for these efforts, and to encourage the Centre to stimulate and empower the different Regions to design ad-hop combinations of regional and country partnership programs that will better serve the interests of CIP.

4.3 Training at CIP

CIP's training program has traditionally been one of its strong points. A study made in the NARS in the 1980s identified CIP's training as a key contribution to their capacity building. The 2002 EPMR commended CIP for aligning its training activities with the research projects, thus providing it status and visibility.

The 2006 Science Council-commissioned study that evaluated training and its impact across the CGIAR, revealed that this important activity has deteriorated across the board in the CGIAR. And although training at CIP has changed substantially during the last five years, due mainly to the budget cut-backs, CIP has been able to counterbalance some of the negative effects and maintained reasonable level of training activities, by using restricted project funds. (See Annex 13 for CIP's detailed report on Training at the Centre.)

4.4 Gender-Sensitive Participatory Research at CIP

The conclusion of a 2007 Science Council-commissioned study conducted by the Program on Participatory Research and Gender Analysis (PRGA) is that those Centres with a higher expenditure on participatory research are more likely to be active on gender sensitive participatory research. CIP is mentioned as a Centre that has devoted considerable efforts in the development of participatory research approaches and methodologies. Some worth mentioning are:

- UPWARD (User's Perspective in Agricultural Research and Development), a network that has conducted participatory research to explicitly incorporate the voice of farmers, particularly females, in the design of research priorities, and that carried out various gender studies with that purpose;

- PMCA (the Participatory Market Chain Approach), a systematic research and development process to progressively empower farmers and other actors for collective action and to build trust among the different market chain actors; and
- Farmer Field Schools, initially aimed at training farmers and other actors integrated pest management, but extended later to other topics.

Through these different approaches, CIP has been able to incorporate rural women, both in the design of research priorities as IPGs, and in the Center's role as a research partner for development.

5 GOVERNANCE

During the time under review, CIP experienced incumbent changes in both the Board Chair (2003) and the Director General (2005) positions. The size of the Board was reduced from 12 to the present 11. In 2006 the number of Board meetings was increased from two to four a year (2 face-to-face and 2 via teleconference).

To form conclusions and recommendations, two Panel members attended parts of the April 2007 Board meeting (but not Committee meetings), interviewed Board members, and reviewed board and committee minutes for the previous five years, policies, and the results of Board practices and self assessments. Overall, (SC issue 13) under the dedicated leadership of the present Chair, the CIP Board has paid considerable attention to governance issues, procedures and training; has become more inclusive in its decision-making; and needs to pay increased attention to the Center's human resource management and capital investments. No CCERs on governance were conducted during the review period.

5.1 Legal Status

The Centre was founded in 1971 and the first statutes adopted in 1972. These were revised in 1999 along with the adoption of the International Personality Agreement, which recognized CIP as an international institution. Since the 2002 EPMR the Board has addressed the revision of the Statutes on several occasions and has amended one Article which now puts limits on the ability of the Director General to issue and sign checks for any amount. In 2005, and again in 2007 the Board Chair proposed re-written sets of Statutes. The Panel has reviewed both draft sets and found them overly legalistic and in some instances not appropriate for a non-profit Centre like CIP. The Panel suggests the Board stay with its existing statutes, making individual changes if they are urgently needed. In the event the Board insists on a total re-write of the Statutes, the Panel suggests that any new version be reviewed with the CGIAR Secretariat legal resources, rather than the expense of outside legal advice, as is presently planned. Further, the Panel would also urge the Board to carefully reconsider proposed changes that would affect:

- The Center's scope and purpose;
- its relationship to the CGIAR system and the role of the CGIAR in any decision to merge CIP with another institution;
- its host country agreement;
- the length of term of the Board Chair position;
- open sessions of Board meetings; and
- The content of open Board meetings.

CIP is viewed as having a good relationship with its host country and the international community in Peru.

5.2 Board Membership and Composition

The Board presently has eleven members including three *ex-officio* positions (two from the host country and the Director General) and plans to reduce the number to nine through attrition. The name, gender, nationality, discipline, area of expertise, Board committee participation, and period of service of each Board member during the review period are shown in Annex 14. Women comprise 36% (4/11) of the Board and 63% (5/8) of leadership positions; 64% (7/11) of the

members are from the South. In terms of the leadership positions, for the past several years, the Vice Chair (a woman) has simultaneously chaired the Program Committee, the Sub-committee on Science Policy (abolished in 2006) and the Nominating Committee, and served on the Executive and Audit Committees. At the April 2007 the Vice Chair asked to be relieved of the Vice Chair responsibility and another female was elected to fill that position. The Vice Chair is also no longer serving on the Audit Committee. The Director General is female.

The Board membership reflects a wide range of disciplines, although the Panel is concerned with the absence of any luminary from the potato or sweet potato field. The Board has just elected a person with significant operating management and financial experience in the CGIAR system. The Board could benefit from further expertise in governance and general management. Managing a research body within a government agency is not the same as having Board responsibility for an institution that must fully generate its own revenues. It is difficult to create a governance capacity after the fact with Board members who see both their skills and interests being elsewhere. A small Board cannot hope to cover all of a center's program areas so science rigor must be managed more efficiently in ways other than through individual Board members. For these reasons the Panel urges the Board to rethink its approach to criteria for Board membership. The Board is actively seeking a new Board member who sits on another CGIAR Centre Board. (SC issue # 10)

Although the Statutes anticipate a maximum of two three-year terms, the Chair and Vice Chair are completing their eighth and seventh years of service respectively, with the rationale (not subscribed to by the Panel) that this was necessitated by the scheduling of the EPMR. Four of the eight elected Board positions are due to end their final terms next year, including both Vice Chair and the Board Chair, who will then have served in that capacity for five years. The Panel understands that the Board plans to extend the term of one of its members beyond the six-year term, to serve as the Board Chair. There has been insufficient action regarding Board succession planning both as it affects membership and leadership. One possibility for the future would be to consider the Board Chair-elect serving as the Vice Chair for the year prior to taking up the position.

5.3 Board Responsibilities

Board responsibilities are next covered according to the organization of the newly revised CGIAR *Roles, Responsibilities and Accountability of Centre Boards* (2007) and the *Report of the Stripe Review of Corporate Governance of CGIAR Centres* (2006)

Determining CIP's Mission and Strategy

This responsibility covers establishing the Center's mission; reviewing, approving, and guiding the Center's strategy; and reviewing, approving and guiding major institute-wide plans, including performance targets (e.g. the Medium Term Plan). The CIP Program Committee "has the responsibility to advise the Board on all aspects of the Center's research and research related programs", a task it has generally shouldered well. In 2003 CIP concluded an eighteen-month Vision exercise that culminated in a major realignment of the Center's research program, discussed more fully in Chapter 2. The process was co-chaired by CIP's Deputy Director General for Research (who in 2005 became the Director General) and the Chair of the Program Committee of the Board. The draft Vision was presented to the Board for review and published in 2004. Subsequently CIP scientists and management prepared a Strategic Plan and presented the draft document to the Program Committee at its April 2006 meeting. The Program Committee

approved the Plan and supported the development of operational plans to implement the strategy. This document shifts from a commodity to a wider focus, and lays out many possibilities, but does not make strategic choices, particularly about the re-allocation of resources to regions. Some Board members commented on their inability to get management to understand that there needs to be more focus on SSA and Asia although the ability of the Centre to do so may in part be a reflection of what donors are willing to fund. The Board needs to balance its focus on monitoring the Center's nine projects with determining the overall strategy going forward. At a Board retreat held in 2006, the Board decided that the Centre should grow significantly in size in the next ten years, by maintaining the present level of activity at the Headquarters while increasing activities in the region. Reallocation of existing resources does not appear to have been considered.

The EPMR Panel did not have an opportunity to observe the April Program Committee meeting, but from the minutes of the meeting, it does not appear there was any Committee or Board discussion of the 2008-2010 MTP which can represent the Board's biggest opportunity to influence strategy. A copy has since been posted on the Center's intranet site. Board members had two weeks to send in comments to the Centre but no opportunity to interact about it with each other as a Board.

Ensuring Strong Leadership and Oversight of Centre Management

In 2005 Dr. Hubert Zandstra completed 14 years as the Center's Director General. The Panel believes that the term of a Director General should not exceed ten years. Further, the Panel does not look with favor on terminal sabbaticals and has been assured that the Board now shares this view. The Board approached the selection process for a new Director General in a systematic and timely way following a broad-based, open and transparent process. From a field of 32 applicants, the CIP Deputy Director of Research was selected and took up her appointment in May 2005.

To assist in Board oversight and to keep all Board members abreast of the Centre, several Board members suggested, and the Panel agrees that a brief monthly report from the Director General on her activities and key events affecting the Centre is important.

The process of evaluating the performance of the Director General was observed by two of the EPMR Panel members. Information on the Director General's work plan and performance was fully discussed by the Board along with discussion and the decision on compensation. The Board does not use other sources of input such as a 360 degree feedback process for the Director General's performance. This input could be useful for both the Board and the Director General. (SC issue #11) All Board members participated in the discussions and on the nature of the feedback to be provided to the Director General by the Board Chair. The process was handled well. The EPMR is unaware of any documented succession plan for the senior management positions.

The Board adopted, in April 2006, two policies to clearly establish Board and Management boundaries: Accounting Policy 1. *Matters Reserved for the Board of Trustees Approval* and Internal Accounting Policy 2. *Matters Delegated to the Director General.* (SC issue 13) The Panel found the intent of the policies to be excellent, but they were obviously written for a different institution, are overly legalistic, and do not always apply to a centre of CIP's size. The monitoring of the Director General's expenses is handled by the Vice Chair and reported to the full Board.

Set and Reinforce Ethical Standards, Values and Policies

The Board has adopted several policies governing its behavior and ensuring its adherence to ethical practices. These include a *Declaration of Interests* statement which aims to disclose conflicts of interest and the receipt of a *Service Agreement* letter at the time of their appointment, outlining the terms of their appointment, expectations for their behavior including a conflicts of interest statement, and policies relating to expense reimbursement and honoraria. Since conflicts of interest are not always predictable, a formal *Code of Conduct* statement would be a useful addition.

To ensure timely and effective oversight of Centre management, the Centre and the Board have spent a considerable amount of effort drafting a CIP *Framework and Administrative Policies* document. These frameworks and policies are then intended to lead to the development of *Operational Policies and Procedures* that in turn will lead to the writing of *Staff Manuals* that can be used to devolve decision-making to both headquarters and regional staff. These draft overarching general policies explain who CIP is and how CIP operates and would be the only ones approved by the Board.

The Panel has three concerns. The first is that only the *Framework Policies* will be approved by the Board. Since these are "big-picture" policies they do not provide the detail required for Board oversight nor measures for determining if they are being followed. The Panel urges the Board to identify those policies which require greater specificity before Board approval. A second concern is the CIP management view that until the *Framework and Administrative Polices* are finalized; work cannot be finalized on some aspects of the *Operational Policies and Procedures* and the *Staff Manuals.* Such a theoretical view could be appropriate when designing an organization from its very beginning, but CIP is an on-going, operating organization whose staff needs access to policies and guidelines now. The Centre cannot afford to wait until all the framework policies are set before it addresses the most urgent operational policies and procedures and the staff manuals. A final concern is that this process is illustrative of the drawn-out nature of completing many tasks at CIP, both at a Board level (e.g. the Statutes) and at a Management level. In today's world, the environment can change rapidly, requiring shorter time frames than in the past.

The Board has been less informed on human resource matters than is appropriate and needed. The Board has expressed a desire for more discussion of human resource issues and at its most recent Board meeting proposed a set of statistics that management should provide and that the Board should review once a year to monitor human resources, including those on gender and diversity. (SC issue #12). Many personnel matters that are public, at least to staff, in most other Centres are not disclosed at CIP; one reason given is that personnel information could encourage kidnappers. Human Resources are discussed more fully in Section 6.3.

An *Appeals and Grievance Policy* is included in the draft *Frameworks* document. However, it is important that this be divided into two parts; one dealing with Appeals and the other with Grievances, in accord with the CBC endorsed *Centre Grievance Policy Guidelines* (2003). In an international centre, the Board has as one of its responsibilities, to serve as a Court of Appeals beyond the Director General level. This is not provided for in the CIP policy, which is not consistent with the Stripe Review recommendations. The Panel suggests the adoption of a separate Grievance Policy, which has the Board as the final Court of Appeal. The Centre is currently drafting a *Whistle Blower* policy.

A process for identifying, evaluating and managing the significant risks faced by the Centre has been in place since the beginning of 2004. The Board, through its Risk Management Oversight Committee, effectively and regularly reviews any incidents that have occurred and makes suggestions on additional areas that need coverage or greater emphasis. At present there is a high dependence on the Director of Finance and Administration for financial matters, which does constitute a risk for the Centre. Additional bench strength in Finance and Human Resources has been recognized by the Board and management, but not acted upon quickly enough.

Board members no longer visit CIP regional activities on their way to Board meetings although if any are in a region on other business, they are encouraged to contact staff and set up a visit. In addition, since 2006 one Board meeting a year is taking place in one of the regions. The Centre has not conducted any attitude surveys to assess staff morale. A user satisfaction survey of services has been conducted, but did not address morale. An EPMR Panel-sponsored staff survey found significant morale problems particularly, but not only, in the regions. Several Board members commented on their decreased interaction with staff and would look for encouragement from the Director General in order to increase contact.

In 2005 the CIP Board adopted a policy that both Spanish and English are the official languages of CIP. For an institution which is part of a larger international system and with an international Board and staff, particular attention must be paid to ensuring that all documents needed for the effective oversight and management of the Centre are in English. This is not always the case. Since CIP is an international institution and with plans to expand its work outside of Latin America, the Board must require of management that necessary documents, manuals, and procedures are in both English and the regional language.

The Panel could not determine that the Board had any mechanisms for ensuring that existing polices are enforced and that polices are communicated and implemented as intended. The Board could consider broadening the scope of the Board's Audit Committee to include operational audits as well as financial audits, or adding this responsibility to the Executive Committee's remit.

Provide Oversight of Programs

Although the Board's focus is at the level of strategy and policy, it nevertheless has responsibility for establishing systems and processes to monitor programs to achieve the Center's mission. This can take several forms: monitoring the achievement of the Medium Term Plans, rigorously discussing and assessing the indicators in the Science Council's Performance Measurement System, through the use of task specific scientific advisory groups, having a comprehensive plan for CCERs, and assessing the implementation of CCER/DCER and EPMR recommendations. At CIP the Program Committee, on behalf of the Board, thoughtfully reviews and reacts to presentations from each of the six divisions and partnerships on an annual basis, but does not appear to focus on their integration and assessing the overall strategy.

The Board has done less well in using CCERs, both to inform its own thinking and to feed into the EPMR process. In 2002 the Board approved a policy on CCERs. However, between 2002 and 2006 the Centre conducted only one Programmatic CCER and two Donor-Commissioned External Reviews. One additional CCER on the NRM Program has been conducted in 2007. When CCERs/DCERs have been conducted, the Program Committee has been active in reviewing the results and monitoring the implementation of the recommendations. Most Board members are unaware of the Center's policy on CCERs, and the Program Committee has decided to await

the outcome of the present EPMR before setting a schedule of CCERs. As a result of the shift to smaller Boards that are more governance focused and less scientific advisory bodies, CIP needs to be more systematic and comprehensive in regularly scheduling reviews.

An important study *Research Priority Assessment for the CIP 2005-2015 Strategic Plan* was published in 2007. The document focused on assessing CIP's research priorities for five key strategic issues facing the Centre. The Panel was surprised that this document was unfamiliar to the Board (the publication had been available in draft form six months earlier) and that, according to its Minutes, the document was not discussed by either the Program Committee or the Board.

Provide Active Oversight of Finances

The Board approves the annual operating budget each year and the Center's expenses have not exceeded revenues since fiscal year 2003. In 2005 the Board commissioned a CCER on CIP's Financial Control and Reporting Systems. The review reported that all financial and administrative systems had been strengthened, and except for the matter of a new MIS, all the issues that were identified during the previous EPMR had been successfully addressed. Several important additional recommendations were made, which this Panel endorses, and are addressed in various parts of this review. One set was directed explicitly to the Board. The first suggested that in addition to the lengthy quarterly financial report there be a short, tight summary of highlights provided to the Board, and that CIP management develop a very concise monthly report that should be posted on the intranet for ALL CIP staff to review, as well as the Trustees. The CIP Executive Committee rejected both of these recommendations as being unnecessary. This was unfortunate as non-financial Board members have difficulty assimilating the current lengthy (about 16 pages including dense tables) report, and a brief monthly report on the status of funding and expenditures would be informative for the CIP staff.

A separate capital expense budget is not approved by the Board but in its stead is a policy that capital expenditures can be made not to exceed the amount of the non-cash depreciation expense. As a result of the policy, presumably in response to budget constraints, capital expenditures have been inadequate to the Center's needs. The Centre has been moving methodically but slowly on developing a long-term capital plan but has yet to begin budgeting appropriately for its capital needs, an issue highlighted by the CCER. The Centre is proud that it has the lowest indirect cost rate of the CG Centres, but it seems to have achieved this low rate in part by insufficiently investing in the infrastructure that is required to support the Centre. The Board must take some responsibility for allowing this to happen (discussed elsewhere).

Quarterly financial reports are provided to the full Board. The Centre rotates and selects its external audit firm in conformity with the CGIAR Financial Guidelines although the Panel was concerned about the review process used by the Audit Committee in its most recent change of audit firm. The Committee must closely monitor it's the firm's performance. The Audit Committee receives the audited financial statements and audit firm's management letter at its annual meeting, and meets in a session with representatives of the external audit firm without the Centre staff being present. The election of the newest Board member brings a seasoned, professionally qualified person with particular strength in the financial management of CGIAR Centres. He is to serve as Chair of the Audit Committee.

Since the early 1990s, CIP has not had an internal audit function; this was handled by CIP's Finance Department. From 2002 to 2004 nine audits were conducted, reported on in Spanish, and split evenly between the regions and specific functions. In late 2004, CIP joined the CGIAR

Internal Audit Unit at the lowest service level, to receive more rigorous and systematic internal audit services; these began in 2005. The Panel agrees with the CCER on Financial Controls recommendation that CIP needs to budget operating funds sufficient to complement the CGIAR auditor, e.g. engaging local expertise to work with the CGIAR auditor to ensure the effective use of the central unit. Management has not fully responded to this recommendation because the Board has directed that expenditure on the internal audit be restricted to what is being invested in the CGIAR IAU. After the first cycle with the IAU, the Centre plans to assess the situation.

At its January 2007 Board meeting, Management introduced a comprehensive new investment policy, but it needs to be acted on by the Board.

Manage the Performance and Relationships of the Board

Under the leadership of the current Chair, the CIP Board has paid particular attention to this aspect of its governance responsibilities. Board processes appear to be open and transparent and are more codified. Board members are, by and large, engaged, conscientious, committed to their responsibilities, and collaborative in their interactions. As described in Section 5.2 the Board has been least effective in striking a balance in the membership of the Board between continuity and renewal. The Nominations Committee appears to have had difficulty involving the Board in developing a roster of candidates with the result that decisions get delayed. The Board needs to be clear in articulating its criteria so that CG nominee appointments are successfully accomplished.

A one-day Board Retreat was held in 2006 to focus on governance and on the kind of Centre CIP wants or hopes to be. Subsequent Board minutes report that decisions were made to increase CIP's size to US$55M in the next 10 years, to reduce the Board size to 10 by attrition, to have two face-to-face and two telephonic Board meetings a year, and to increase the proportion of female IRS to 30% (currently 19%) and the share of IRS with origin from the South to 50% (currently 40 %, almost half from Peru).

The Centre has provided CGIAR Board training for its members and the Board Chair has the responsibility for orienting new Board members. Board members commented favorably on the induction process. The Board *Handbook* was revised in 2006. To make it more useful to the Board, the Panel suggests that those Board approved policies that most directly affect the Board and its oversight responsibilities be a part of the *Handbook*. Like all Centre documents, these policies need the date of adoption clearly indicated.

While assessments are provided on Board performance, the Board Chair, and increasingly for Committees and their Chairs, there is still an unwillingness to have all Board members conduct assessments of each other, as individual Board members, on a regular basis. This evaluation could also provide feedback that would help individuals become more effective. Until these assessments become the common practice that they now are in publicly held companies, it will be important to limit terms of Board members.

Board members commented on the improvement in the conduct of Board meetings and the quality of the supporting materials, although some information still does not get distributed until close to, or during, the meeting. Draft Board and Committee meeting minutes are provided in a timely manner. In the past it has sometimes not been clear whether the Board acts on recommendations from Committees, because the Board minutes will simply say "Report Accepted" but without the Committee minutes being appended. Several Board members noted

the efficiency and effectiveness with which the virtual Board meetings (teleconferences) were conducted. Board members' expenses are monitored by the Vice Chair and reported back to the full Board.

Board members need an opportunity to candidly explore issues and concern privately amongst themselves, without having fully thought through their ideas. In keeping with good governance practices, the Panel urges the Board to hold a closed session, without the Director General present, at each of its face-to-face Board meetings.

Attention needs to be paid to the efficient division of responsibility among Board members. The Executive Committee has reduced responsibility now that the Board is meeting four times a year. During the review period there were committees for audit, nominations, programs, a sub-committee on science policy (abolished in 2006), and risk management oversight. The Vice Chair position chaired the Nominations Committee, the Program Committee and the Sub-Committee on Science Policy until she requested to be replaced as Vice Chair during the recent April board meeting.

The Board annually assesses its own group performance. The results of the 2006 assessment were presented with two areas receiving lower scores, namely receiving timely information for the Board meetings and not having all items that should have been discussed on the agenda. In response to open-ended questions, the Board clearly wanted more focus on human resource issues. For the 2007 Board meeting, the Board Chair introduced a new 28-item assessment instrument that he asked Board members to complete at that moment. Although professionally developed, the rating scale did not appear to have face validity (5 high, 4 good, 3 no evidence, 2 below standard, 1 unacceptable) with the result that an average score of 3 could be 'no evidence' or could be an average of 4 and 2). The Panel suggests that the Executive Committee or Nominations Committee review the instrument to determine if any adjustments need to be made for CIP's circumstances, to re-visit the rating scale, and the time allowed for its completion.

Until this year, the Vice Chair verbally reviewed the Chair's performance in a private session with the Board. In 2007 the Board Chair introduced a new form for his own assessment. There was no discussion of the form or the process. The Vice Chair asked the Chair to leave the room so there could be discussion in addition to the numerical rating. As was the case with the 28-item assessment, the suggested rating scale suggested seems inappropriate and ambiguous. Additionally, the Board ought to determine if the form includes all the items it believes are important. Previously, the Board Chair had made an informal assessment of the Board Secretary; a more formal process is being considered, based on the Board Secretary's TOR.

At each of the face-to-face meetings individual Board members report on interactions they have had with stakeholders. The Board Chair has been active on the CGIAR Alliance Board, currently serving as its Chair, and spearheading many of its initiatives.

Recommendation # 15

Because the Board has not followed its Statutes regarding length of term limitations for some of its members, and has not been fully effective in its delegation of leadership responsibilities and replacement processes, ***the Panel recommends*** that the Board pay urgent attention to the systematic rotation and replacement of Board positions, and to Board and Committee leadership and succession planning.

Recommendation # 16

Because of the shift to smaller governance Boards which need mechanisms to provide oversight to a broad scientific remit, and the need for CCERs as a part of the EPMR process, ***the Panel recommends*** that the Board establish a systematic and comprehensive schedule of programmatic CCERs for the next five-year period, and that funds be budgeted for this purpose.

6 MANAGEMENT AND FINANCE

6.1 Leadership and Management

In the five year review period CIP's annual revenues have grown from US$18.7M to US$23.1M (23.5%) and in staff from 467 to 553 (18%). CIP management and staff are to be commended for having achieved this growth. The Panel noted, with concern, the elimination or downgrading of several important positions. Primary changes in organizational structure (see the organization chart in Chapter 1) have been the elimination of the Deputy Director General, Corporate Development position and in its stead the creation of a Director of Finance and Administration position, and changes in the research management structure from a project to a division structure plus the elimination of the position for Director, International Cooperation. Two new positions report to the Director General—the Head of the Resource Mobilization Unit (a position created in response to the previous EPMR's recommendation) and the Head of the Communications and Public Awareness Department (a restructured position). The Director General has a three-person "Directors" management team, comprised of the Director General, the DDG Research, and the Director for Finance and Administration.

No CCERs in the areas of management, administration or human resources were conducted during the review period; a CCER on Financial Controls and Reporting is discussed in elsewhere.

Both at a Board and Management level, CIP is trying to systematize and document policies and procedures. It is obvious that tremendous effort has gone into these initiatives, yet the Panel urges CIP to avoid becoming overly bureaucratic and perfectionist in its approaches at the expense of getting an appropriate job done in a timely way. Today's world moves rapidly and re-visiting documents, policies and procedures many times over, requires time and energy that could be better spent elsewhere. In the meantime, staff report that requests for information or approvals are log-jammed or not responded to, commitments made are not followed up on, items one would expect to have been dealt with at a lower level require more senior decision-making, decisions affecting employment conditions are changed without consultation, usually to the detriment of the employee, renewal of contracts is not always done in accordance with specified lead times, and there is lack of feedback from management both on the corporate and program side. The Panel learned that so many items were "in process" or "in transition" that it was often difficult to assess the quality or implementation of many of the procedures.

An increasingly important role of the Director General has become resource mobilization and donor-relations. This and her other responsibilities demand a rigorous office and travel schedule which in turn makes imperative that business continues "as usual" and expeditiously in her absence. As a Director General who is committed to excellence, it may be challenging to relinquish control, particularly when there has been inadequate bench strength and a lack of international experience and contacts in some key corporate positions. In part as an approach to cost saving, some of the positions normally recruited at the IRS level had been re-classified to nationally recruited staff positions. The Director of Finance and Administration still performs as the Head of Finance, thereby creating an unmanageable workload for himself. There is no IRS Head of Human Resources. Both positions have been advertised for some time, and they need to be filled expeditiously (the Head of Finance position has been vacant for two years). In this age of web-based recruiting, elongated time frames for recruiting are no longer the norm as they continue to be at CIP. A stronger corporate services function is needed.

6.2 Research Management

Organization and Monitoring of Research

During the Visioning Exercise a new organizational structure of Divisions and Partnerships was developed with all relevant units reporting to the Deputy Director General for Research. The Panel has made several observations in regard to the new structure and suggested an alternative one that may serve CIP better.

According to the Staff Perception Survey, less than 60% of staff at all levels believes that the way in which research is currently organized has been appropriate. Some have indicated that the new system is not conducive to the needed inter-division working plans and creates an environment of competition among Divisions. In addition, in the opinion of the Panel, the imbalance in resource allocation among the research divisions is a potential managerial problem, since the role of division leaders is likely to vary significantly across divisions. This problem may be aggravated when resource allocation to each division does not reflect true research priorities, but other non-research activities.

It was reported to the Panel that a Program Management Team (PMT) has been re-instituted and that monthly meetings and frequent consultations have been held. Basic priorities for research management have been:

- Reducing the administrative burden (better adjusting of CIP to CGIAR requirements);
- encouraging publications (frequent reminders and place in the individual working plans);
- providing appropriate tools for working support (web-based tools and reducing e-mail traffic); and
- Quality management and assurance (Procedures for research reporting and evaluation).

The Panel has recommended in Chapter 2 that Regional Directors play a more substantive role in the research process rather than their present primarily administrative function.

Three relevant management information system (MIS) components have been developed apparently with good results: the individual work plan and evaluation system, the Information Outputs reporting systems, and the Output Target reporting system. All these allow more efficient communication with the different entities of the CGIAR System on the one side, and to identify from the very beginning those outputs that are candidates for publications in professional journals. For example, 119 working papers were registered in 2006. The down side of all this is the time that the scientists have to devote to these systems. Nearly half of CIP's IRS Perception Survey respondents said that they spend most of their time in activities other than research.

Research Performance

Research performance is discussed in detail in the several sections of Chapter 3. The Science Council Performance Management System (PMS) for 2006 results indicate that CIP generally scored higher than the System averages, with the exception of publications. CIP scores were: (1) 95.4% of its research output targets (self-assessed), above the 88.1% average Centre rate; (2) eight out of ten on Outcomes, compared with the System average of 7.8; (3) 7 out of 10 for overall impact assessment based on two impact studies, compared with the System average of 6.4; and (4) in terms of quality and relevance of research as indicated by the # of reviewed publications in ISI journals/scientist, CIP had 0.28 publications, and 27% of its scientific papers were published

with developing country partners in refereed publications, below the system average of 42%. This latter set of results is consistent with a detailed analysis undertaken by the EPMR Panel on staff productivity.

Strategic Planning

The current version of CIP's strategic plan has been analyzed in Chapter 2 and a recommendation been made about the need to complete it, including priority setting and a business plan. In the opinion of the Panel, CIP's PMT has not been highly committed to developing a strategic plan as recommended by the previous EPMR. After more than four years CIP does not have a sound or specific Strategic Plan to guide the Centre regarding its basic mission of food and cash for the poor potato and sweet potato producers in the target areas.

Priority Setting

The last comprehensive multi-criteria priority setting exercise was conducted by CIP ten years ago. Since then the world, the CGIAR and CIP have changed a lot. The Panel commends CIP for its document: *Research Priority Assessment for the CIP 2005-15 Strategic Plan: Projecting Impacts on Poverty, Employment, Health and Environment.* Despite being *ex-ante* research, the paper used extended consultations with CIP scientists, NARs and other stakeholders to verify the relevance and quality of the information used to feed the different econometric models. The Panel sees this exercise as very useful in terms of project prioritizing and consensus building within the Centre, but it regrets that the information produced has not been used. The Panel urges management to utilize this exercise as input in finalizing the Strategic Plan and priority setting.

6.3 Human Resources Management

Responsibility for human resources management is divided between two NRS positions—a human resources manager who is responsible primarily for locally recruited staff and an administrative position in the Office of the Director General, with responsibility for external relations and international personnel. An IRS level position has been created and is presently being recruited for.

Many of the concerns reported in the staff interviews and the Staff Perception Survey (discussed elsewhere) deal with issues that an IRS human resources professional (with the international network of peers and resources that implies) could significantly impact e.g. responsiveness from senior management, timely establishment of detailed personnel policies and procedures, and equitable salaries and benefits in the regions, if given the authority to do so. The user satisfaction survey, conducted by the Centre, also listed human resource management and related issues in the bottom five "least satisfactory" service areas. There is a need, both at the IRS and NRS levels, for acknowledgement by senior management when good work is done. Small acts of recognition are noticed and need not be costly.

The Centre has recently acquired the *Adryan* HR software from a Lima vendor, and is in the process of implementing it. It is primarily for local Peru payroll, and the extensions for CIP's IRS and HRM are non-portable. Some of the modules are being delayed in implementation, pending the arrival of the new IRS human resource person and certain modules will be translated to English for external users. The operational modules for NRS salaries for internal use on the HR Department PCs are in Spanish, while the IRS database is in English. This may be problematic for the about-to-be hired IRS for human resources and for regional staff. *Adryan* interfaces with

CIPFIS, not ideally but manageably, and is a much-needed short-term solution to CIP's human resource information management needs.

Staffing Patterns

The Panel noted with concern the inconsistency of human resource data, making it difficult for the Panel to determine where and how human resources are actually allocated among research projects and regions.

A deficit of US$1M during 2001 required significant staff cuts in that year, but between 2002 and 2006 both IRS and NRS staff each increased by 18%. IRS numbers remained the same at headquarters with the 9 added IRS positions being in the regions. NRS numbers also increased in the regions by 26 positions (33% increase) while those at Headquarters increased by 15%, or 51 positions. Seventy-seven percent of CIP staff is located at headquarters.

Personnel costs increased from US$8.8M to US$10.6M during the review period; Increases were in IRS costs (33%) and NRS at Headquarters (9%). Although the number of NRS in the regions increased by 33% their total personnel costs remained flat. The Panel did an analysis of salary costs for IRS and for NRS staff at Headquarters and NRS in the regions. While the average IRS salary has increased at about the rate of inflation during the review period, the average salary of NRS at HQ declined a total of 5% (without taking inflation into account) during the 5 year period, and for those NRS in the regions (who earn only one-third of what those at HQ earn on average) declined by a total of 25%. While there can be logical reasons for these data, there are also implications for management planning. The Panel, recognizing that there can be cost of living, and differences in employment levels, suggests that further study be made by management to ensure equity in Headquarters and regional salaries and benefits. Further, these cost data may have significant implications for the most cost-effective placement of staff, whether at headquarters or in various regions.

Restricted funds are used to cover the salaries of 52% of IRS researchers. When salaries of all research staff (IRS and NRS) are considered, this percentage drops to 41% implying that NRS salaries are more likely to be paid from core (unrestricted) funds.

Table 6.1 CIP Staff 2002 - 2007

STAFF	2002	2003	2004	2005	2006	Projected 2007
IRS	**51**	**52**	**56**	**59**	**60**	**60**
Headquarters	38	36	37	39	38	39
Regions	13	16	19	20	22	21
NRS	**416**	**404**	**436**	**445**	**493**	**498**
Headquarters	337	342	373	379	388	382
Regions	79	62	63	66	105	116
TOTAL IRS/NRS	**467**	**456**	**492**	**504**	**553**	**558**
Headquarters	375	378	410	418	427	421
Regions	92	78	82	86	127	137

Staff turnover rates for IRS, NRS at Headquarters, and NRS within each of the four regions during the five year period are not out of order (Table 6.1). Since 52% of IRS salaries are special project funded, it is hard to disaggregate those who leave because of the end of the project or for some other reason. Exit interviews are not conducted with leaving; this process could yield useful information for CIP management. The Strategic Plan, if elaborated on by a Business Plan as suggested in Chapter 2, would imply a long term staffing plan.

Diversity including Gender

Twenty six nationalities are represented in the 60 IRS; two staff list dual Peru/Canadian nationality. Forty one percent of CIP IRS is from developing countries (IDA Part II) and many of these (19% of the total staff) are Peruvian. Staff by major categories is: Europe (44%), South or Central America (24%), U.S.A. (10%), Sub-Saharan Africa (8%), Asia (8%), and Australia or New Zealand (5%). (See Table 6.2)

Female IRS declined as a percentage of IRS staff from 20% to 18%, while NRS female employees continued to stay at 30% of all NRS employees during the five-year period. CIP's employment of women scientists is below the norm for CGIAR Centers. The Board in 2006 adopted a statement that over the next three to five years the share of female IRS would increase to 30% and the share of IRS with origin from the South should increase to 50%, but specific plans to accomplish this have not been made.

Table 6.2 Gender Statistics 2002 and 2006

	2002	2006
IRS Female	10 - 20%	11 - 18%
Male	41 - 80%	49 - 82%
TOTAL	**51 100%**	**60 100%**
NRS Female	124 - 30%	147 - 30%
Male	292 - 70%	346 - 70%
TOTAL	**416 100%**	**493 100%**
All Staff		
Female	134 29%	158 29%
Male	333 71%	395 71%

The Center has a wide age distribution in its IRS with a mean age of 47; about 60% of IRS are younger than or equal the average age. About 70% of IRS has worked at the Center for 6 years or less.

There is a general Gender and Diversity statement, referred to as a "policy" in the proposed CIP *Framework and Administrative Policies,* but without adequate specificity to be enforceable or monitored. Goals need plans that are put into action and can be monitored by the Board. Similarly, there is a Spousal Employment Policy which states simply that "CIP spouses and/or immediate family members shall not work in either a direct or indirect supervisory relationship or that relatives may not work in the same department, unit, division or project of CIP". Given the nature of a CGIAR Center and its regional out-postings, there needs to be provision for exceptions, with proper approval processes spelled out. There is nothing in the policy regarding CIP helping spouses obtain employment outside of CIP, which may vary by country. Last

minute renewals of IRS contracts, instead of the six months required notice, would have a negative impact on the work- lives of spouses who are usually women.

A policy exists that provides for day care for working female IRS. A Gender and Diversity Committee of eight members, appointed by the Director General, was formed in 2005. Chaired by the Human Resources Manager, the Committee conducted a survey of all personnel on recruitment, retention and work-life balance issues. The results were provided to the Director General in March 2006 but it is not clear what follow-up action the Centre has taken. The Committee had developed a thoughtful and comprehensive list of proposed activities for 2007, suggested that this be brought to the Board for its information, and proposed a monthly meeting with the Director General to review actions, suggestions and focus of the Committee's efforts; it is not apparent that this happens. This would be a logical responsibility to delegate to the incoming IRS Head of Human Resources.

At its most recent meeting the CIP Board accepted a proposal by two of its members, that CIP management report to the Board once a year on a number of specific human resource indicators including staff composition (including gender and nationality), staff turnover, staff training, and plans for reaching and monitoring human resource objectives set by the Board. The Panel suggests that CIP management provide these statistics to the Board within the next two months for the year ending 2006 as a beginning point. (SC issue #12)

Personnel Policies and Practices

Like a number of other CGIAR Centres, CIP is moving to the implementation of a One Staff concept, whereby the Centre will have one set of rules and policies for all staff, and one job classification structure. A table showing allowance and benefits for categories of staff has been assembled, but is not available to staff. CIP does not make public to its staff salary structures and ranges. While this is understandable in the environment in which the majority of their staff works, it makes even more important that the Board monitors fairness and equity. The Panel reviewed IRS salaries and found that, while not out of line with other CGIAR Centres, there are several significant IRS staff "legacy" anomalies that the Panel urges the Director General to correct as contracts conclude. The City of Lima has excellent facilities available to IRS e.g. housing, schooling, security, and medical services. To the extent these services are unavailable, or available only at very high cost, in other regions where CIP IRS are located, comparable levels of benefits must be provided. Staff reports that this is not always the case. NRS salaries were discussed above.

For CIP, fixed term recruitments cover the length of restricted projects, some of which may be as long as five years. From CIP's perspective, the labour relationship finishes at the conclusion of the project. Many employment conditions and benefits for NRS in Peru (reflecting 70% of all CIP staff) are mandated by law—these include viewing the fixed term recruitments as indefinite appointments--resulting in possible consequences for CIP. There is no NRS staff association because that is not in accord with the Peruvian government's views. However, an IRS staff council could be formed, which could help improve communication channels (see section on the Staff Perception Survey).

The most recent comparator study for five levels of Lima-based NRS, from laborer to executive, was conducted in 2003 and found that at that time CIP was below market in base salaries in a number of instances, particularly for laborers, but above the market in benefits. We suggest that CIP take advantage of the Watson-Wyatt country comparisons to ensure equity across CIP and its

regions. The Centre has looked to update job descriptions for administrative assistants and secretaries as a pre-cursor to undertaking an overhaul of job classifications and job descriptions. A consultancy report was delivered in December 2006 that categorized 28 positions into 5 categories and looked at overall salary market competitiveness. Given that NRS salaries in Peru are grossed-up because salaries are not subject to income tax, the study showed there were no major problems as a whole for Peruvian IRS, although some individual adjustments needed to be made. The Centre is examining job classifications, job descriptions, and salaries to establish internal equity for all positions at the Centre as a whole, although this work is moving along slowly. Similarly, a single *Personnel Policy* for NRS and IRS, incorporating policies, benefits, and perquisites has been in draft form for some time, but is not generally available to staff. The hiring of an internationally experienced human resource professional will be an important step towards moving these processes along in a more timely fashion.

Performance Management Systems

In 2006 a new process was piloted for non-research staff at both headquarters and in the regions**.** Available online, the forms included sections on:

- Performance results self-assessment—period 2006 (completed by staff member); b
- behavioral assessment 2006 (completed by supervisor); goals-period 2007; and
- individual development / learning plan

In addition there were handouts for supervisors on *FAQ 2006 Performance Evaluation* and *Tips for Conducting Effective Performance Appraisals: Guidelines for Supervisors*. The Staff Perception Survey indicates that IRS are more satisfied with the performance management process (71%) than are NRS (55%) although conversely, that means a significant proportion of both categories are not. Most complaints dealt with the lack of a reward system and career development plans. Many NRS in Lima complete the form in Spanish, which is not necessarily readable by non-Peruvian supervisors.

CIP does not use 360 degree performance-based systems for its staff at any level, including management. A 360 degree process would provide input to the evaluation process from not only the supervisor but also selected peers and subordinates; the process can provide useful input both to the employee for staff development and to the supervisor.

Recruitment and Staff Development

Recruitment processes for IRS researchers have been improved, with wider distribution of announcements, the use of the Web, and the assistance of the CGIAR Diversity and Gender Program. The Panel reviewed the recruitment processes and found them generally consultative and sound, but it was puzzled as to why the Directors Committee was involved in the short list decision-making. This would seem to add an unnecessary and time consuming step to the process; the Panel suggests that the DDG-Research present his recommendations directly to the Director General who makes the final decision, and that Regional Leaders have greater input for the selection of research staff in their region. Recently recruited IRS in Lima commented favorably on their induction process to the Centre, both in terms of relocation assistance and orientation to CIP.

Slightly more than half of IRS and NRS agree that job opportunities at CIP are likely to attract the highest quality staff. This is in part because of the perceived lack of staff development and opportunities for professional advancement, as evidenced both by the User Satisfaction Survey (discussed elsewhere) and the Staff Perception Survey. There is no published policy for

professional advancement, no criteria for promotion, no information on what is the next level for advancement, or what is the next level in the salary range. Both IRS and NRS feel strongly that opportunities for professional advancement at CIP are limited or non-existent. They report that there are no funds available for in-service training, in the use of software, or the opportunity to learn English which used to be available. A line item for funds for staff development, both in the regions and at Headquarters, and for both IRS and NRS is needed. When the Centre moves to the installation of an ERP (see section 6.5) successful implementation will be heavily dependent on adequate staff training.

Staff Perception Survey

CIP has not conducted staff perception surveys (as distinct from the customer satisfaction survey addressed in elsewhere). In support of this review, the EPMR Panel surveyed (in English and Spanish) all CIP staff with access to email. A 74% response rate was obtained from the IRS, a 58% response from NRS-Professionals, and 22% from NRS-Other (both these latter categories were self-selected). Regrettably, the data could not be sliced separately by headquarters and regional responses. Responses have been factored into the appropriate sections of this review. A summary of the results is presented in Annex 15. The responses indicate ways in which staff morale could be further improved. These include more timely decision-making and responses to requests for information from management, and delegation and further de-centralization of decision-making. Understandably, and unavoidably in the CGIAR System, NRS worry about the short-term nature of many of their contracts and IRS are concerned about the lack of advance notice regarding the non-renewal of contracts, and the impact this has on their families. Given the results obtained in this survey and the inexpensive availability of web-based customized survey instruments, the Panel suggests that management or a task group delegated by management conduct a staff perception survey annually to provide feedback on areas that are working well and those that could benefit from management attention.

6.4 Financial Management

CIP is one of the smaller CGIAR centres with annual revenues in 2006 of US$22.5M. Its revenues have increased gradually by 23% during the review period, in nominal dollars. Expenses increased by 19% during the same period. Except for 2002, revenues have exceeded expenses, resulting in an increase in net assets of US$3.56M, reaching US$5.380M excluding net fixed assets (or US$2.083M when restricted net assets are also removed). As a result of cautious management, the Center's financial position is sound.

Financial Performance

A table of CIP's Financial Position and Statement of Activities is included in Annex 16. A summary of key financial information and indicators is given below.

Like most CGIAR centres, restricted revenues have driven CIP's growth. While unrestricted (core) funds increased by 11%, restricted or special project funds grew by 31%. Restricted funds account for 59% of CIP's total revenues as compared with 55% in 2002. The Centre is projecting that by the end of 2010, revenues will reach US$28.3M and that 73% of these will come from restricted sources. Increases in both direct and indirect cost recovery have been an important factor in achieving balanced budgets—from US$0.7 in 2002 to US$2.2M in 2006. Personnel costs have remained at about 46% of total expenses. As the Center's personnel costs have increased, these have applied to IRS and Headquarters NRS. Resource allocation priorities by projects and regions have been discussed in some detail in sections 3 and 4.

Table 6.3 CIP Key Financial Information 2002 – 2007

(Based on CIP's Audited Financial Statements)

				Projected		
	2002	**2003**	**2004**	**2005**	**2006**	**2007**
FINANCIAL INFORMATION (in US$ Mil)						
Total Grants	18.393	17.828	22.397	22.005	22.470	23.663
Unrestricted	8.035	7.964	8.957	8.113	8.907	7.732
Restricted	10.358	9.864	13.440	13.892	13.563	15.931
Other Income – Investments/Gains	326	387	279	293	639	630
Total Revenues	**18.719**	**18.215**	**22.676**	**22.298**	**23.109**	**24.293**
Operating Expenses						
Program Related Expenses	16.100	14.302	18.758	19.131	19.804	21.154
Research Management	2.143	2.041	2.232	2.176	2.390	2.212
Operations (Management and General exp)	1.814	1.825	1.719	1.887	1.990	2.074
Recovery of Indirect Cost	(0.725)	(0.804)	(1.151)	(0.969)	(1.142)	(1.393)
Total Expenses	**19.332**	**17.364**	**21.558**	**22.225**	**23.042**	**24.047**
Surplus / (Deficit)	**(613)**	**851**	**1.118**	**73**	**67**	**246**
Fund Balances (Net Assets)	**5.535**	**7.132**	**8.252**	**8.239**	**9.091**	**9.340**
Unrestricted	1.799	4.536	5.654	5.727	5.794	6.040
Restricted	3.736	2.596	2.598	2.512	3.297	3.300
KEY FINANCIAL INDICATORS:						
Short term solvency (Liquidity)						
Working capital (days expenditure)	51	97	99	93	96	97
Current ratio	1.3	1.4	1.6	1.6	1.5	1.6
Adequacy of reserves (Long Term Stability)						
Net assets excl. fixed assets expend. In days	52	97	95	91	89	90
Cash management on restricted operations						
Restricted accounts receivable ratio		0.87	0.91	0.88	0.13	.39
Efficiency of operations						
Indirect cost ratio	15%	15%	14%	12%	13%	13%

On all of the CGIAR key financial indicators CIP's financial health improved during the review period (as shown in Table 6.3) and all are within CGIAR acceptable target ranges:

- The short term solvency indicators for liquidity (the ability to pay current liabilities) as measured by the current ratio (current assets divided by current liabilities) increased from 1.31 to 1.5. The measure of working capital to fund expenditures excluding depreciation (which is a non-cash expense) increased from 51 days in 2002 to 96 days in 2006, which is well within the target range of 75 -90 days.
- The measure of the Center's long-term financial stability, the *adequacy of reserves*, calculated by taking the unrestricted net assets excluding fixed assets and dividing by the operating expenses per day, rose from 51 days in 2002 to 97 days in 2003 and has declined slightly to 89 days in 2006. The target range is 90-120 days.
- The Center's *cash management on restricted operations*, which calculates the restricted accounts receivable ratio, aims to be <1; it was 0.13 for CIP in 2006.
- CIP's net working capital plus investments increased from US$2.6 to US$5.8M in 2006.

- CIP's indirect cost ratio, often viewed as a measure of a Center's *efficiency of operations*, has fallen from 16% in 2002 to 13% in 2006, the lowest in the CGIAR System (average is 20%). While this might be considered good, it may in this instance more represent the fact that insufficient investment is being made in the Center's operations (discussed later).

CCER on Financial Systems, Reporting and Controls

This CCER, undertaken in April 2005 by a consultant well-experienced in the CGIAR system, was commissioned by the CIP Board of Trustees. The terms of reference were *to examine the financial control systems and the financial reporting systems and report on their effectiveness, any weaknesses, and how they could be improved.* There was no focus on field office control or reporting because of time constraints. The CCER examined progress since the 2002 EPMR and concluded that "the financial position of CIP is strong; with one exception-- annual cash availability for capital purchases through funding depreciation is insufficient to satisfy CIP's requirements." The Panel concurs with this conclusion, and with the other CCER recommendations which are discussed in the context of the relevant sections of this report. The Panel found the review to be excellent, and very useful in informing its own work.

Financial Reporting System (CIPFIS)

The financial reporting system, CIPFIS, was developed in-house in 2000 with a number of upgrades and enhancements since that time. It interfaces effectively with an in-house logistics package, CIPFIS. The CCER in 2005 reported "CIP managers have access to good quality financial information, online, through CIPFIS". Through interviews, the User Satisfaction Survey and the Staff Perception Survey, the Panel concludes that many users no longer subscribe to this view. The financial accounting system works well for the finance staff but not as well for many of its other users. Some CIP stakeholders and many staff expressed a wish for more transparent financial reporting. The shortcomings of CIPFIS as an integrated management information system (MIS), and a recommendation for its replacement, are discussed in section 6.6. The Panel agrees with the recommendations of both the previous EPMR and the CCER; the Panel concludes that the time has come for CIP to make an investment in a commercially available Enterprise Resource Planning (ERP) system without further delay. (SC issue # 14)

Fund Management and Budgeting

CIP fund management has improved during the review period, aided by the conservative planning and spending practices management has followed and in part by the strength of most non-dollar currencies, and the increased reserves that yield more interest income. The Centre has focused on improving its cost recovery (almost double in 2006 compared with 2002) and in assisting staff in the budgeting aspect of proposal writing. To this end, the Finance Department has prepared a very user friendly document to guide scientists, and various online tools. To the extent that project and regional leaders are involved in setting their budgets and receiving timely budget reports, greater understanding, commitment and control will result.

Financial Controls and Accountability

CIP functions as a highly hierarchical, centralized operation which has the advantage of more readily achieving financial control, along with disadvantage of a sense of disempowerment on the part of many staff. In order to maintain good controls, financial reporting processes are highly centralized. Detailed financial guidelines (now in their 5th draft) are being developed for the regions.

The Finance Department has a special projects unit in place to handle financial reporting for restricted grants and contracts. This unit appears to be functioning well although project managers report difficulty in obtaining budget information for decision-making and the unit is rated as unsatisfactory in both the Staff Satisfaction and Staff Perception Surveys. Its shortcomings may not always be in the control of the unit.

CIP did not have a separate internal audit function until 2005; internal audits were conducted by the Finance Department which issued its reports in Spanish only. This must have been a challenge for the non-Spanish speaking members of the Board's Audit Committee. In 2005 the Centre began using the CGIAR IAU, joining at the lowest service level. Eight internal audits were conducted in 2006. A report on the status of the implementation of the recommendations indicates that many "pending". The Panel suggests that management review the status again in September 2007. The Board will decide in the October 2007 meeting the future of its relationship with the IAU. The Panel believes that there are many advantages to this relationship, that the quality of the reports has been good, and that the Centre would be disadvantaged to return to its previous internal audit arrangement.

It is not clear whether the Centre has a Board approved investment policy. A report was made to the Board in January suggesting that a comprehensive investment policy for CIP had become a priority due to the growing cash and investment balances. The main objective is obviously the preservation of capital with the investment managed in such a way as to ensure that principal would be exposed to the minimum level of risk. The paper proposed an investment strategy. The Board does not appear to have taken action on the proposed policy except to the extent that a general statement is included in the *Frameworks* document. The Panel suggests the Board formally adopt the policy and its implementation guidelines. An *Investments Quarterly Report* is provided to the Board.

Capital Investment Plan and Budget

The 2005 CCER cautioned the Board about avoiding the practice of setting aside inadequate capital resources and stated that "the Board of Trustees should insist that a viable financing plan is established to meet these needs while at the same time protecting the established cash reserves for their intended purpose". The Board did not address this issue in its subsequent approvals of the 2006 or 2007 budgets. Capital expense has been low because of the Center's unofficial policy of limiting the purchase of long-term capital assets to the level of its annual depreciation expense. The Center's requirements have been higher than this amount as the Centre has fallen behind in replacements and as CIP has grown. Part of the cost of new equipment and other fixed assets has been covered by restricted project funds, but these are, appropriately, expensed 100% in the year they are purchased, so no allowance is made for their replacement. The Centre has conducted an assessment of its capital needs for the next ten years and concluded that an additional US$470,000 annually is needed on average from earmarked and/or future surpluses. The Centre must budget annually for its real capital expense requirements, which means that it needs to create larger surpluses.

Risk Management

The Panel agrees with the CCER conclusion that CIP's Board and management are paying appropriate attention to the important topic of risk management. At a Board level there is an *Ad Hoc* Committee on Risk Management that considers not only financial risks but also risks at a program level e.g. it recently commissioned from management a risk assessment of emerging potato diseases. The Centre provides a risk management report to the Board twice a year. In

2005 the management held a financial risk workshop that outlined the purely financial risks that exist for the Centre, and described policies and procedures, which have continued to be developed, that are now in place to manage these risks. These included revenue decreases, expenditure increases, insufficient cash reserves, creditor insolvency, weak budgeting and forecasting, fraud, and legal and banking problems. Another approach to risk management in the regions has been, in conjunction with a CGIAR IAU internal audit being done in a region, the key risks identified during the course of the audit and a preliminary assessment of the impact of the risks and the likelihood of their occurrence has been provided. In 2007 the Centre is proposing that the IAU conduct an assessment of CIP's enterprise risk management system. The Panel suggests that the Centre may wish to address risk management in its *Framework and Administrative Policies* documentation

6.5 Administration

Facilities

In the early days of CIP the wise decision was made not to build a large Headquarters facility, so the Centre is not burdened today with unused fields or buildings. The property in Lima is attractive and carefully maintained although its systems are aging. In order to attain and maintain a healthy financial situation, sufficient investments to upgrade laboratory, all greenhouses, and administrative facilities have not been made. CIP owns the Director General's residence, which underwent major renovations in 2005, and a guest house in Lima. The regional offices tend to be administrative, without research facilities, and are generally co-located with the NARS; an exception is the regional office in Nairobi which is located on the International Livestock Research Institute (ILRI) campus and receives certain support services from ILRI.

Logistics and Purchasing

The Panel did not have time to look at this area in depth, although some data are available. According to the Director of Finance and Administration, following the 2002 downsizing at CIP several processes such as purchasing services, motor pool and maintenance requisitions were streamlined through new or improved modules in CIPLOG, the in-house automated system now integrated with CIPFIS, resulting in easier procedures. Over 60% of imported purchases are attended to in less than 60 days, and over 80% of local purchases are completed in less than 15 days. However, the Staff Perception Survey indicates dissatisfaction with purchasing and administrative services. No doubt management is working to improve the situation.

User Satisfaction Survey

In 2006 both headquarters and regional staff were surveyed as to their level of satisfaction with the service quality of 37 CIP administrative and research support units. For each unit, respondents were asked what aspects they felt were functioning well, or not well and needed to be strengthened; and for concrete suggestions to improve the service. The Panel did not see responses tabulated separately for headquarters and the regions, which might have shown important differences in experiences. Based on the results, plans were developed to increase user satisfaction in the 6 areas that were rated less highly. The Panel commends the Centre for seeking user reaction as a basis for improving service and suggests that a similar survey be conducted on an annual basis with results reported separately for regions and headquarters. By using low cost web-based instruments such as SurveyMonkey.com or Zoomerang.com, these surveys can be compiled and analyzed with the need for minimal staff resource.

6.5 Information and Communication Technology

The 2002 EPMR made recommendations on enhancing CIP's financial information system (CIPFIS) into a fully-fledged, integrated management information system (MIS) including financial and project management systems, and that managers at all levels then be given access to complete and transparent budgetary information on the activities they are accountable for. Similarly, a 2005 CCER on Financial Control and Reporting Systems recommended, regarding the future of CIPFIS, to establish a timetable to replace CIPFIS with an integrated resource management system. The new system would encompass financial management /accounting, human resource management, project management, and must be fully functional as a management information system (MIS).

The Centre has invariable responded that, while not ideal, its in-house systems were adequate and cost-effective, and that it could not afford to go to a fully integrated MIS (otherwise known as an Enterprise Resource Planning system—ERP). Because of the critical need for a human resource management package, the *Adryan* software package (described in section 6.3) was purchased and largely installed in late 2006/early 2007. In February 2007 a Transition MIS Implementation Team re-submitted to the Director General a twelve month proposed work plan for a transitional MIS. This would integrate *Adryan* with CIPFIS and provide for outsourced contract programming to integrate other databases and software in standalone systems, and to provide web-based interfaces for regional access.

When that work is successfully implemented, what will still be missing and had been recommended since the 2002 EPMR, is a science end-user Project Management Information System (PMIS) like MS *Project* which would also allow desktop collaboration and the development of a database for use in fund raising. However, MS *Project* requires Vista software that would require the purchase of new desktops and laptops. Since CIP replaces few of these each year (instead of the100+ one might expect), this would be an expensive upgrade. However it may be necessary, regardless of whether CIP purchases an ERP or stays with integrated individual packages and it, along with training costs, also accounts for the largest part of any move to an ERP installation.

A report-generating package, *Crystal Reports*, is used to generate reports from CIPFIS, CIPLOG and the other databases for reports for Finance, the Board, and the Research Informatics Unit. Although theoretically an end-user tool for designing reports for direct output for screen viewing and printing, or for web access, its effective use depends upon knowledge of corporate database design and structure which few users outside the CIP HELPDESK know. It is not available outside of Headquarters and there are no resources for external training in its use.

There may be an opportunity for an inter-centre partnership e.g. CIMMYT, which is currently implementing MS Dynamics AX. This ERP offers comprehensive integrated project management functions for an institution of CIP's size, but would require a significant investment both in the package and training, and in the required hardware (including desktop and laptop PCs).

In summary, as was the case at the time of the previous EPMR and the 2005 CCER, there is currently still no integrated MIS including a PMIS available at HQ and in the regions. CIP continues to move slowly both on PMIS and MIS integrated systems. The Panel recognizes that the total cost could be in excess of US$250,000 for an ERP, plus annual licensing and maintenance costs. Nevertheless, the research staff urgently needs a project management information system,

inconsistencies in the multiple databases create staff time inefficiencies, and easy access by end-users is not available. Without timely senior management decision-making and the investment of serious dollars, CIP will continue to lag in having the I.T. infrastructure required of an international scientific research centre, and will certainly not meet its Board stated goal of growing significantly in the near term. (SC issue # 14)

6.6 Resource Mobilization Management

In response to the 2002 EPMR recommendation that *CIP hire a competent international development officer, together with a marketing survey, to develop a strategic plan for increasing its external funding,* a Chief of Resource Mobilization (now called the Head, Resource Mobilization Unit—RMU) was appointed in late 2004. The position reports to the Director General. Restricted funds accounted for 60% of all grant funds in 2006, compared with 56% in 2002, and are expected to increase to almost 80% of all grant funds by 2010. During the review period unrestricted funds grew by 14% (but are expected to decline by 2010) while restricted funds grew by 31%. The funding environment for CIP, as for all Centres, continues to be challenging.

The expectations of the position have not been fully met. Although RMU was originally intended to obtain major funds from traditional and non-traditional sources, much of the time to date has been spent on building infrastructure and databases. A strategic plan has been developed aimed at traditional and non-traditional donors and is in the process of being enlarged to include strategies with specific countries. Part of the role of the RMU has been to educate the CIP Board and staff on the field of professional fund raising. Going forward, clarity is needed about the role of RMU as many scientists misunderstand the position to be one that will actually write grant proposals for them. Opportunities exist for improved collaboration among the Communications and Public Awareness Unit (CPAD), the RMU, and the regional leaders who have their fingers on the pulse of both regional needs and donor interest. A new position has been advertised for a Grants and Contracts Coordinator who will logically be posted in the Office of the DDG-Research.

The Panel recognizes CIP's dilemma that it "takes money to make money". Nevertheless, without the creation of in-house databases from a project management information system (that CIP does not yet have) and an investment in databases that access and monitor financial data on potential non-traditional donors and CIP will have difficulty accomplishing its vision of growing rapidly in its resources in the next nine years.

6.7 Communication and Public Awareness

At CIP all aspects of communication from public awareness to assisting scientists in getting their papers published are handled by the Communications and Public Awareness Department (CPAD) which reports to the Director General. Well-targeted, attractive, and proactive communications are playing a key role in ensuring that the results of research by CIP and its partners achieve impact. CPAD's objectives are to increase the use of CIP's research output, the awareness of CIP's outputs, and to stimulate increased financial support. The Panel commends CPAD for the photographic quality and creativity in design in its outputs.

The unit is guided by an audience-driven strategy aimed at CGIAR members and policy-makers, donors, research partners, the media and general public as well as CIP's own community of staff. There has been considerable interest in CIP's activities from local and overseas print and media

journalists resulting in good coverage. CPAD produces an attractive Annual Report, Newsletter, the content and design for CIP's revised website, various CDs, and supports the production of scientists' working papers and publications. CPAD has created and delivered a series of well-received writing workshops for scientists in Nairobi, Indonesia, and at CIP headquarters. With regard to the Annual Report, there had been discussion that this should be a report of the Board rather than the Centre. The Panel does not believe that this is an appropriate change. The Panel would encourage increased timeliness in the production and distribution of the Annual Report.

While CPAD makes effective use of the resources it has, with increased funding it could position CIP better as an expert source on certain development issues thereby raising its visibility to the influential policymaker and donor community. Closer collaboration is needed between CPAD and the resource mobilization function to achieve synergies in effective fundraising and relationships with traditional and non-traditional donors. An opportunity which CIP is capitalizing on is that 2008 has been proclaimed the International Year of the Potato; CPAD had begun a number of initiatives related to this.

Recommendation # 17

Because of the inadequacy of CIP's practice of funding capital expenditures only to the level of its annual depreciation cost, ***the Panel recommends*** that: (1) CIP budget annually and explicitly, for Board approval, its capital expenditures, based on the Center's actual needs; and (2) that the Centre allocate the necessary funds to respond to the most urgent needs as identified in its recently prepared capital assessment plan.

Recommendation # 18

Because of the need to enable both research and corporate service staff to work efficiently and accurately, ***the Panel recommends*** that CIP invest, without further delay, in a commercially available ERP suitable to its requirements.

7 CONCLUDING REMARKS AND CONSIDERATIONS FOR THE FUTURE

The Panel would like to conclude by expressing its appreciation for CIP's work in favor of poor potato and sweet potato farmers. The task that CIP faces while responding to an ever-changing reality is certainly daunting. Within CIP's comparative advantages, and with the committed group of excellent scientists, rests the ability to respond to needed changes in the science on which its research programs are based, in order to make them more effective.

But there are changes of a different nature that a research Centre is often not prepared to deal with. We refer to the decline in core funding for its programs, and the pre-eminence of restricted or earmarked funds. Ten years ago, about one-third of CIP's budget was committed to earmarked projects. Today earmarked funds comprise about two-thirds of the Center's total budget. In the mean time annual expenditures have declined in real terms.

As CIP, and the CGIAR system as a whole have grown and matured, donors want to have an impact to see visible changes produced by their investments. According to its 2008-2010 MTP, CIP's research agenda is almost entirely financed by so called "research contracts", contracts that often include resources for broad development endeavors that go beyond CIP's expertise and comparative advantage, with major negative impacts on a Centre like CIP. The Panel is convinced that the Center's increased reliance on restricted funds has seriously limited, not increased, its ability to adjust to new situations and to take advantage of new opportunities.

The Panel is aware that some of the recommendations it has made carry funding implications for CIP, not because their implementation requires additional resources, but because their implementation may deprive the Centre of resources that it currently has. However, this Panel believes that CIP has a lot to gain by realigning its work around its comparative advantages of producing new potato and sweet potato technologies and the related policies and institutions for these crops. CIP's scientists have estimated that the Center's potato and sweet potato research will deliver significant economic, employment and health benefits over the coming decades. Given the importance of these crops for poor, rural families, a large share of the anticipated benefits are expected to go directly to poverty reduction. Donors and investors of CIP should be able to see clearly that the avenue open to CIP to contribute to the envisaged impacts of improving the livelihoods of millions of poor farmers is by producing relevant research outputs and the necessary outcomes conducive to the adoption of superior potato and sweet potato technologies. The eighteen recommendations that the Panel has put together as result of this EPMR should help CIP to move forward in this direction.

Annex 1
CIP 6th EPMR Panel Composition and Bio data

CHAIR

Edgardo Moscardi
Av. Chenaut 1957, 11B
1426 (zip code) Buenos Aires, Capital Federal
Argentina
Tel: (+54) 11 47781257;
Mobile: (+54) 91161375506
Email: emoscardi@mac.com

MEMBERS

Jai Gopal
Division of Crop Improvement
Central Potato Research Institute
Shimla-171 001, Himachal Pradesh, North India
Tel: (+91) 177 2625073; 2670350
Mobile: 9418344330
Email: jai_gopal54@yahoo.co.in

Malachy Akoroda
Department of Agronomy, University of Ibadan (UI), Oyo State, Nigeria
Mobile: (+234) 8035829286
Fax: (+234) 02 2412221
Email:m_akoroda@yahoo.com;

Donald MacKerron
30 Gotterstone Drive, Dundee,
DD5 1QX, United Kingdom
Tel: (+44) (0)1382 737616
Mobile: 07833 606877
Email: donaldandinga@tiscali.co.uk

Carlos Pomareda
PO. Box 111-2050 San Pedro de Montes de Oca, San José-Costa Rica
Tel. (+506) 271-3631
Mobile: (+506) 380-8906
Fax. (+506) 271-0088
E-mail: sidesa@racsa.co.cr

Julie Noolan
The Carroll Group
Postal address: P.O. Box 6790
Avon CO 81620-6790 USA.
Tel: (+970) 926-5075
Fax: (+970) 926-5073
Email: Jnoolan@aol.com
Street address: 84 Castle Peak Gate, South Side
Edwards, CO 81632 USA.
Tel: 970-926-5075

CONSULTANT

Alejandro Avedissian
Address: Vice Alte. O'Connor 665 – 2º C
CP: R8400ACI – San Carlos de Bariloche –
Provincia de Río Negro – ARGENTINA
Tel: (+54) 2944 43 4848
Mobile: (+54) 2944 1558 3030
E-mail: avedissian@bariloche.com.ar

RESOURCE PERSONS

Beatriz Avalos-Sartorio
CGIAR Science Council Secretariat
Viale delle Terme di Caracalla, FAO
00153 Rome, Italy
Tel: (+39) 06 57055659
Mobile: (+39) 3493116450
Email: Beatriz.AvalosSartorio@fao.org

Manuel Lantin
CGIAR Secretariat
Science Adviser, CGIAR
The World Bank
1818 H Street NW, MSN G 6-601
Washington D.C. 20433, USA
Tel. (1 202) 473 8912 E-mail:
m.lantin@cgiar.org

MOSCARDI, Edgardo (Argentina)
Position: 2006- Present: Consultant
Expertise: Agricultural economics, research management, technology transfer and adoption, rural development
Education: PhD Agricultural Economics, University of California, Berkeley, 1975; MSc Agricultural Economics, Postgraduate College of Chapingo, Mexico, 1971; BSc Agronomy, National University of Cuyo, Mendoza, Argentina, 1968.
Experience: Present- Consultant. 2003-2005: Head, Mexico Office, Inter-American Institute for Cooperation on Agriculture (IICA). 1997-2002: Executive Secretary of the Regional Fund for Agricultural Technology (FONTAGRO), based at the Inter-American Development Bank (IADB). 1991-1997: Representative of IICA in Colombia; 1986-1991: Director General of National Institute for Agricultural Research (INTA) Argentina. 1983- 1996: Senior adviser for policy formulation, Secretariat of Agriculture, Argentina. Was member of the Board of Trustees of CATIE. CIMMYT, Board Member (1989-1994). ISNAR 2nd External Program and Management Review (EPMR) Panel member, 1991. CIAT 3rd External Program and Management Review (EPMR) Panel member, 1989. LAC Representative to the CGIAR, 1984 -1986. 1977-1982: Regional Economist for the Andean zone, CIMMYT, Ecuador. 1976-1977: Economist. 1974-1975: Postdoctoral candidate. 1983-1984: University of Florida-USAID, Rural Adviser to the Technology Transfer Program, Ecuador.

AKORODA, Malachy Oghenovo (Nigeria)
Position: Professor, University of Ibadan, Department of Agronomy, Nigeria.
Expertise: Plant breeding, farming systems, genetics, statistics; sweet potato, cassava, soybean, yams, okra
Education: PhD (Agronomy/Plant Breeding), University of Ibadan, Ibadan, Nigeria, 1976-81. BSc (Agriculture/Crop Science), University of Ibadan, Ibadan, Nigeria, 1972-75. International Graduate Course on Statistics in Agricultural Experimentation held at IITA, Ibadan, Nigeria, March 1985.
Experience: 2004-2006: Officer-in-Charge, IITA High Rainfall Station, Onne, Rivers State and Agronomist, Pre-emptive Management of the Cassava Mosaic Virus Disease in Nigeria in 12 States in Southern Nigeria. Chiefly contributed to the release of 9 improved cassava varieties. 2003: Assisted the implementation of Cassava Commercialization Strategy in Nigeria; produced with FAO a book on the methodologies for estimating root crop statistics in the tropical world; prepared a Strategic Cassava Flour Chain of Supply. 2002-2003: Appraised and reviewed an implementation plan of IFAD Yam Project for Benin, Nigeria, Togo and Ghana. 2001-2003: Advisor, Planner, and Report Preparation to USAID Root crop project of SARRNET (Mozambique). 1998-2001: Agronomist for USAID projects. 1989-99: Senior Lecturer (1989) and Professor (1994) in the Department of Agronomy, University of Ibadan, Ibadan. 1987-90: Breeder/Agronomist of IITA in the Gatsby Root Crops Project on cassava, sweet potato, and yams at the Institute of Agricultural Research in Adamaoua Province of Cameroon. 1984-87: Part-time breeder, Yam breeding Section, TRIP, IITA, Ibadan. Was also involved in various USAID and IFAD projects in Africa. 1983-87: Lecturer II (1983) and Lecturer I (1986), Plant Breeding/Seed Technology Unit, Department of Agronomy, University of Ibadan, Ibadan, Nigeria. 1980-83: Okra and Corchorus breeder, and head of the Seed Production Unit of the National Horticultural Research Institute (NIHORT), Ibadan, Nigeria. Executed some 50 consultancy assignments on farmer participatory activities, technology adoption and project assessment (plant breeding, agronomy, general crop production). Over 60 publications including 38 journal articles on crop breeding and genetics, seed production and reproductive biology, agronomy and cropping systems, technology transfer and delivery systems, ethno botany, impact assessment, horticulture, genetic resources management, agro-meteorology and training. Sub-team member of the System wide Review of Plant Breeding Methodologies in the CGIAR, 2000. Reviewer of the Generation CP full-proposal, 2002.

GOPAL, Jai (India)
Position: Principal Scientist, Central Potato Research Institute, Shimla, India
Expertise: Potato genetics and breeding, plant biotechnology
Education: PhD, 1996. MSc, 1977. BSc, 1975, Punjab Agricultural University.
Experience: 2005- to date: Head, Division of Crop Improvement, Central Potato Research Institute, Shimla; 2003- 2006: Visiting Professor, Hokkaido University, Japan; 1998-2005: Principal Scientist, Central Potato Research Institute, Shimla, India; 1984-1998: Senior Scientist, Central Potato Research Station; 1978-1984: Scientist, Central Potato Research Institute. Has been awarded several medals for his contribution to science. Research areas include genetics, growth and development of potato plant for physiological and agronomic characters both under in-vivo (field) and in-vitro (tissue culture) conditions for basic as well as applied aspects. Has developed simple and innovative methods to reveal the genetic structure of segregating populations and identified selection criteria for complex characters. Has been associated in the development of seven potato varieties viz., Kufri Kanchan (wart immune and late blight resistant), Kufri Pukhraj (early bulking and late blight resistant), Kufri Jawahar (early maturing and late blight resistant), Kufri Sutlej (medium maturing and late blight resistant), and Kufri Chipsona 2 (high dry matter and low reducing sugars processing variety), Kufri Shalija (highly resistant to late blight) and Kufri Pushkar (high yielding variety for multiple cropping). Has also been involved in collecting, conserving, evaluating and documenting a large number of potato germplasm accessions. His findings have been published in international and national journals. Editor-in-chief of the Potato Journal and Processing editor of Potato Research. Edited the "Hand Book of Potato Production, Improvement and Post- Harvest Management", 2006. Member of various societies and associations such as the National Academy of Agricultural Sciences, India, Japan; Japan Society for Promotion of Sciences.

MACKERRON, Donald (United Kingdom)
Position: Retired from the Scottish Crop Research Institute and currently engaged in part-time consultancy work in the UK, France, and Japan.
Expertise: Crop physiology, agronomy (potato); knowledge of potato growing in Europe
Education: PhD in Botany, 1971, University of Aberdeen. BSc in Botany, 1966, University of Aberdeen. Academic Distinctions: Traill Prize in Botany (1966), Collie Prize in Botany (1966).

Experience: 1997 - 2000: Project leader of the EU-funded Concerted Action on nitrogen and water in the potato crop - "Efficiency in Use of Resources: Optimization in Potato Production", with twenty partners. Research interests: modeling the growth of the potato, development of a Decision Support System for potato growing which became a large project, partly funded by the British Potato Council, called MAPP - Management Advisory Package for Potatoes which was launched in March 2001. 1987-2003: Secretary, Potato-Crop Sub-committee of the Scottish Society for Crop Research. 1996-2002: Chairman, Physiology Section of the European Association for Potato Research. 1994-2000: Chairman of the Potato Crop Network under the auspices of GCTE Focus 3. (Global Change in the Terrestrial Environment, part of IGBP). 1997 - 2000: MAFF, A predictive model of potato size distribution and procedures to optimize its operation. EU Coordinator, Efficiency in Use of Resources: Optimization in Potato Production. BPC/SET/MRS, Management Advisory Package for Potato extended to 2002. 1992-1997: PMB, Optimization of nitrogen and water use in the potato crop. 1990-1993: PMB Development and Validation of Predictive Models for the Nitrogen Requirements of Potato Crops. 1987-1990: PhD student supervisor (CIP, China) on the genotypic variation in the responses of the potato to drought and the interactions between these responses. 1992-1995: Co-ordinator of six research programers on aspects of climate change, funded by the Scottish office. 2001: SED&G, Diversification of Agriculture. Has won the Order of the British Empire Honors and written numerous publications on the physiology, agronomy, nitrogen fixation and yield in water-stressed environments of the potato crop.

POMAREDA, Carlos (Peru)
Position: 1994 -2007: Prívate Consultant and General Manager Servicios Internacionales para el Desarrollo Empresarial, (SIDE,S:A:) and Corporación Ganadera Los Laureles.
Expertise: International agriculture, international trade, investment and development; agricultural economics
Education: PhD in Agricultural Economics, Texas Tech University. MSc in Agricultural Economics, North Carolina State University. Agricultural Engineer, Universidad Agraria, La Molina.
Experience: 1987-1993: IICA, Director, Program of Agricultural Policy and Planning. 1984-1986: INIPA, Peru, Co-leader of the National Program of Agro economics. 1979-1983: IICA, Coordinator of the Research component of the Project "Credit and Insurance in Latin America". 1977-1979: SIECA, Chief of the project "Agriculture and Economic Integration in Central America". 1974-1976: World Bank, Assistant in the project Agricultural Price Policy in East Africa. 1972-1974: NCSU, Assistant in the project "Agricultural Trade" México/EEUU. 1969-1970: U.A. La Molina / CENDRET. Field Technician in irrigation and drainage. Has been involved in the design and evaluation of rural projects and programs, private enterprises and organizations and dealt with international trade agreements directly related to agriculture, including AA, SFS, TRIPS. Has written a number of articles on agricultural trade.

Name: NOOLAN, Julie (Australia)
Position: 1992-Present: President, The Carroll Group, Inc., Avon, Colorado
Expertise: Management, strategic planning, organization and management development, library science
Education: PhD, 1974, University of Chicago, Sociology of Science. MBA, 1983, University of Chicago, Finance and Marketing. MA, 1968, Library and Information Science, University of Chicago. Post-graduate Certificate, Organization and Systems Development, Gestalt Institute of Cleveland, 1992.
Experience: 1995-present: Professorial Lecturer, Graduate School of Public Affairs, And American University. 1990-present: President, The Carroll Group, Inc. 1984-1990: Executive Vice President, the Carroll Group, Inc. 1977-1984: Executive Director, Association of College and Research Libraries. 1977-1984: Senior Lecturer, General Management and Financial and Cost Accounting, University of Chicago. 1972-1977: Director of Training, Medical Library Association. 1968-1972: Instructor, Graduate Library School, University of Chicago. Has undertaken numerous consultancies for international organizations including the World Bank, the Fulbright Commission, the National Science Foundation, the Department of Education, the National Endowment for the Humanities, USAID, Academy for Educational Development, and the International Board for Soil Research and Management (Thailand). Served on the boards of twelve national and international organizations including IPGRI, INIBAP and ICARDA and participated in EPMRs for ILCA, IRRI, ICLARM, IITA, and ICRISAT. Served as member of the CCER for ICARDA, 1997 and IPGRI, 1996. Published 3 books and authored over 20 articles on strategic planning, organization change and management development.

Name: AVEDISSIAN, Alejandro (Argentina)
Position: Certified Public Accountant
Expertise: Financial auditing
Education: Master in Environmental Risk Management. Degree: D.E.S.S. Diplôme des Études Supérieurs Spécialisées, 2001- 2002, Universidad Nacional del Comahue, Neuquén Province - Argentina and Université de Poitiers, France. Universidad de Buenos Aires, 1978-1984, certified Public Accountant, with professional national license. (Economics Professional Association of Buenos Aires City and Río Negro Province).
Experience: Present- Certified Public Accountant. Both founder and partner of the following professional bureaus: Avedissian & Singh - Certified Public Accountants bureau; Intercont Consulting- Professional consulting firm on investment analysis; Pro Patagonia SRL- Projects and

ventures; Geoda Ambiental - Professional consulting firm on Environmental Risk Management. 2002 - Present: Counselling in environmental risk management. 1999 - Present: Both founder and partner of Intercont Consulting, based in Argentina. 1992 to present: Freelance Certified Public Accountant. 2000 - 2003: Financial and economic counselling. 1996 - 1998: CEB, Cooperativa de Electricidad Bariloche Ltda. dealt with management control and assessment of projects. 1993-1995: Management control and budget director at CEB. 1990 - 1992: Economic Department Chief at CEB. 1988 - 1989: Elaboration and administration of the investment project FONTINALIS S.A., Río Traful fish-farming, Argentina. Conducted other consultancies and delivered courses at CEB and the University of Buenos Aires. Fluent in French, Spanish, Armenian and has good working knowledge of English.

Annex 2

a. Guidelines for External Program and Management Reviews of CGIAR Centres, including Terms of Reference for External Program and Management Reviews of CGIAR Centres

INTRODUCTION

In June 2005 the CGIAR approved the policy document, *Monitoring and Evaluation System for the CGIAR Centres*. The new components of the monitoring and evaluation (M&E) system include annual performance measurement (PM), Centre Board Commissioned External Reviews (CCER) and streamlined External Program and Management Reviews (EPMR).

EPMRs are commissioned by the SC on behalf of the Group and organized jointly by the SC and the CGIAR Secretariat. They are conducted every five years for each Centre. These Guidelines are to be used in implementing the EPMR as part of the new M&E process. They incorporate the Terms of Reference for EPMRs (TOR) as endorsed by the Group in 1997. They do, however, bring new approaches to the EPMR based on an enhanced Centre Board Program for CCERs. The guiding principles for the Centre Boards to implement CCERs are attached (Annex 2).

In the new M&E system, EPMRs continue to provide a measure of central oversight and serve as an essential component of the CGIAR's accountability system. The EPMRs bring to a closure a five-year review cycle. They complement the annual Science Council (SC) assessment of the MTPs, the annual self-assessment mechanisms of the PM, and the CCER Program of the Boards, covering the Center's research Program and management.

These Guidelines have been designed for review of a Centre. A companion Guideline will be developed for the External Reviews of Challenge Programs based on the same principles.

TERMS OF REFERENCE FOR EPMRS[5]

Objectives and Scope

EPMRs seek to inform CGIAR members that their investment is sound, or recommend measures to make it so. Members of the CGIAR and other stakeholders can be informed whether the Centre is doing its work effectively and efficiently. EPMRs are both retrospective and prospective and help ensure the Centres' excellence, relevance and continued viability, and the CGIAR System's coherence. Each review is expected to be strategic in orientation and as comprehensive as the situation warrants.

The broad objectives of EPMRs are to: a) provide CGIAR members with an independent and rigorous assessment of the institutional health and contribution of a Centre they are supporting; and b) to provide the Centre and its collaborators with assessment information that complements or validates their own evaluation efforts, including the CCERs.

The EPMR Panel is specifically charged to assess the following:

The Center's mission, strategy and priorities in the context of the CGIAR's priorities and strategies;
The quality and relevance of the science undertaken, including the effectiveness and potential impact of the Center's completed and ongoing research;

[5] As endorsed by the CGIAR in 1997.

The effectiveness and efficiency of management, including the mechanisms and processes for ensuring quality; and
The accomplishments and impact of the Center's research and related activities.

Topics to be covered

Mission, Strategy and Priorities

The continuing appropriateness of the Center's mission in light of important changes in the Centre and its external environment since the previous external review.
The policies, strategies, and priorities of the Centre, their coherence with the CGIAR's goals (of poverty alleviation, natural resources management, and sustainable food security), and relevance to beneficiaries, especially rural women.
The appropriateness of the roles of relevant partners in the formulation and implementation of the Center's strategy and priorities, considering alternative sources of supply and the benefits of partnerships with others.

Quality and Relevance

The quality and relevance of the science practiced at the Centre.
The effectiveness of the Center's processes for planning, priority setting, quality management (e.g., CCERs, peer reviews and other quality and relevance assurance mechanisms), and impact assessment.

Effectiveness and Efficiency of Management

The performance of the Center's Board in governing the Centre, the effectiveness of leadership throughout the Centre, and the suitability of the organization's culture to its mission.
The adequacy of the Center's organizational structure and the mechanisms in place to manage, coordinate and ensure the excellence of the research programs and related activities.
The adequacy of resources (financial, human, physical and information) available and the effectiveness and efficiency of their management.
The effectiveness of the Center's relationships with relevant research partners and other stakeholders of the CGIAR System.

Accomplishments and Impact

Recent achievements of the Centre in research and other areas.
The effectiveness of the Center's programs in terms of their impact and contribution to the achievement of the mission and goals of the CGIAR.

CONDUCTING EPMRs

In the new M&E system, EPMRs become increasingly an audit of the other components: annual PM and CCERs. Beyond the broad objectives stated in the TOR, the EPMRs are meant to provide Centres with independent recommendations and advice on how to improve the efficiency and effectiveness of the Centre in pursuit of its mission and goals. Thus, the EPMR report is both an audit on past performance and a strategic document with a focus on the Center's future. Specifically, EPMR needs to advise on what changes the Centre might consider in terms of its programmatic strategy and objectives; what new avenues of collaboration and partnership it might consider; and what structural changes the Centre might consider in pursuing more efficiently and effectively its mission and goals.

The EPMRs are designed to complement and build on the CCERs by providing a more strategic overview of the performance of the Centre. The PM provides inputs to both CCERs and EPMRs. To be credible and acceptable, all CCERs and EPMRs must strive to be objective and transparent. While the EPMR process must be participatory to enhance mutual understanding of all the important issues, the distance between the Panel and the Centre must be observed to protect the Panel's integrity and independence. The reports must be direct, explicit and frank. These principles are observed throughout the review process.

The Participants

The participants in an EPMR are: the EPMR Panel Chair and members; the CGIAR Members, the SC, the SC Secretariat and the CGIAR Secretariat; the Panel Secretary; members of the Center's Board, management and staff; the Panel's support team of external consultants and resource persons; Chairs of CCERs (as resource persons where possible); and the Center's many partners at the local, national, regional and international levels.

Strategic Issues to be addressed by the Panel

In addition to the generic TOR for each EPMR which have been approved by the Group, the SC identifies a set of Centre specific issues to be addressed by the Panel. The SC does this by canvassing views from SC members, CGIAR Members, the Centre under review, other CGIAR Centres and the CGIAR Secretariat. Items are also drawn from the CCERs and the SC assessment of the Center's Medium-Term Plans. The list of issues is shared with the Centre and the Panel as specific strategic issues to be addressed during the review.

Implementation

The SC and the CGIAR Secretariat jointly organize the EPMRs. The SC focuses on all programmatic aspects and the CGIAR Secretariat focuses on Centre management and governance aspects of the review. Consulting with the Centre management as necessary, they determine review design and Panel composition.

The SC and CGIAR Secretariats provide a resource person for the respective aspects of the review. A staff member of the SC Secretariat serves as Panel Secretary and resource person for programmatic issues. S/he assists in organizing the review in consultation with the CGIAR Secretariat, the Centre, the Panel Chair and members.

The EPMR relies heavily on Board commissioned CCERs, which are expected to greatly improve the efficiency of the EPMR process.

The EPMR schedule consists of the pre-implementation phase (preparation by the Centre, SC and the CGIAR Secretariat), Panel interaction with the Centre Board, usually through attendance at a Board meeting; Initial Phase visit to the Centre HQ, which may take place back-to-back with the Board meeting; visits to selected field sites as deemed necessary by the Panel Chair; and a Main Phase also at the Centre HQ during which the Panel completes all the chapters of the report.

The Pre-implementation Phase

The pre-implementation phase of the EPMR begins with the Board ensuring they have in place an adequate cluster of CCERs. The *Principles* suggest that CCER to be effective for the EPMR should be reasonably current, i.e. within 3 years of the EPMR. The following steps are needed: The SC Director

will send a formal letter to the Centre three years before the EPMR begins with a request to the Board to provide a schedule of the CCERs to be conducted during the three year period leading into the review.

The CCER reports, including the Panel membership and their qualifications, and an account of the follow-up actions planned or taken by the Centre Management and Board are made available to the SC and CGIAR Secretariats at the onset of planning of the EPMR.

The EPMR Panel Profile

The design of the EPMR and the Panel composition depend on the coverage and quality of the CCERs. The SC and CGIAR Secretariats brief the Panel Chair on the strategic issues raised and on the information available from the CCERs. The final design of the EPMR, including the Panel profile and size, will be adjusted with the aim of not duplicating the CCERs. The Panel will consider the CCERs and assess their quality as input to the EPMR.

Panel Chair and Panel Members

The quality of the outcome of the EPMR depends critically on the quality of the Panel Chair and the Panel members. In order to engage highly competent professionals, the EPMR process must be efficient, including timely planning. The Panel Chair and member selection process follows procedures established by the SC and the CGIAR Secretariat. The process of identifying a Chair begins about one year before the EPMR. The Panel Chair should be a recognized expert in a relevant area of research with considerable experience in research management and understanding of international agricultural research in the development context, have excellent analytical and leadership capability, and excellent command of English. S/he should have served on an EPMR or equivalent review outside the CGIAR and demonstrated capacity to lead an independent and objective review.

The Panel Chair is involved in determining the Panel profile and composition. For doing this, s/he is i) informed of the Center's and the SC's suggestions regarding Panel profile; ii) briefed by the Panel Secretary and CGIAR Secretariat resource person on the coverage of CCERs and whether they meet general criteria for quality; and iii) provided with a long list of potential Panel candidates. Direct contact with the CCER Panel Chairs by the SC Secretariat, CGIAR Secretariat or Panel Chair is advised. The Panel Chair is also briefed by the SC Chair about the overall goals and conduct of the review.

The Panel size should not exceed four, including the Chair. The Panel Chair will judge the need for consultants with specific skills to address particular aspects of the TOR. Panel members are generally selected for their ability to focus on the institution-wide issues relating to the Center's mission, strategy, priorities, programs, governance, and management. The Panel members should be drawn from a pool that has maximum regional and gender diversity; they are to be recognized experts in their field of expertise and the context of its application to solve problems; they must have good analytical skills and ability to write clearly and concisely in English.

The Panel Chair ensures that the Panel undertakes its assessment and completes the task in accordance with the general TOR and addressing the Centre-specific strategic issues. The Chair assigns duties to each Panel member and encourages members to contribute to all aspects of the review report so that the report reflects the judgment of the whole Panel. S/he conducts the EPMR in a manner that is objective, analytical and constructive and in a manner of mutual respect with the Centre. The Panel Chair shares factual information with the Centre for verification while maintaining independence in judgment.

The Centre

The Center's Board, management and staff play a crucial role in the conduct of the review. They are closely involved in planning and organizing the review. Throughout the process, the collaboration and inputs of Centre management and staff are essential for the review to run smoothly and for the report to be credible and acceptable. The Centre should appoint one senior contact officer to facilitate the implementation of the review including compilation of all documents and information.

In preparation for the EPMR, the Board is expected to make available to the Panel a list of issues relevant to the EPMR. For this, the Board is encouraged to draw from the findings of CCERs and other relevant reports. The Centre management provides appropriate material for the Panel following the instructions provided by the SC Secretariat and CGIAR Secretariat. Some of the material is expected to be readily available, while other documentation needs to be prepared specifically for the EPMR. The main documents include:

- The Strategic Plan of the Centre or a strategic report from the Board on the Center's vision and goals showing how the Centre will contribute to the CGIAR goals;
- An aggregate analysis of impact of the Centre activities showing how the investment in the Centre has contributed to outcomes and impact;
- A portfolio analysis on Centre research including recent planning, i.e. the MTP reports for the period under review; and,
- Results of self-assessment processes including PM reports, CCERs and other relevant reports. All donor review reports should also be made available to the Panel.

A detailed list of documents and other materials to be provided to the Panel by the Centre, SC and CGIAR Secretariats is given in Annex 1. The materials will be placed on a restricted Web site established for the EPMR, and distributed to the Panel on a CD-ROM prior to the Initial Phase. The Panel Chair and Secretary advise Panel members on specific reading tasks.

Centre Stakeholders

Representatives of national agricultural research systems (NARS, including NGOs, universities and the Private Sector), regional and sub-regional organizations, bilateral and multilateral agencies, other researchers and managers of other Centres and Challenge Programs and advanced research institutions are important partners of CGIAR Centres, and their inputs are essential for the quality of the EPMR review process. As part of the review, these stakeholders' views on the Center's strategy, programs and collaboration and outputs and outcomes are gauged through two processes, which the Panel Chair defines in consultation with the Centre and Panel members: a) Stakeholder survey by phone or e-mail, the results of which ought to be available to the Panel early on (the Panel may adjust its own survey if results of a recent Centre conducted stakeholder survey are available); and b) Field visits. These consultations are intended to facilitate the assessment of the Center's role in the CGIAR and in the global context.

Assessment of the Board

Interactions between the Centre Board and the Panel form an essential component of the review. Thus early in the process, preferably prior to the first visit of the full Panel to the Centre (Initial Phase)[6], the Panel Chair and Panel member specializing on governance issues attend a Board meeting and interview Trustees about the Board and Centre matters. These interactions contribute to the Panel's

[6] The Board meeting and EPMR Initial Phase should not coincide.

assessment of the Board's efficiency and operations, and the rigor of the Board's oversight of research quality and relevance, management and finances, including the implementation of the CCERs. The Panel should observe the content and dynamics of Board procedures, Board and Management relations and evidence of the Board being fully engaged with all key matters, including setting the vision and goals, monitoring and evaluating performance, setting policies, preparing contingency plans and ensuring that resources are used effectively and efficiently.

The Panel members attending the Board meeting need to review both the documentation provided by the CGIAR Secretariat on CGIAR governance, the Centre on legal matters, and documents provided to the Board, including some recent Board Minutes. In addition to following the Board meeting, they need to observe the Board committees in action.

Initial Phase

The Initial Phase usually takes about a week. The Centre, Panel Chair and Panel Secretary design the agenda of the Initial Phase. The visit includes sessions and discussions with Centre management and key staff members in order for the Panel to obtain an overview of the Center's current activities and future plans, to identify strategic issues and formulate hypothesis for key findings. The key senior Centre staff should be available in person during the Initial Phase.

Before and during the Initial Phase the Panel receives detailed briefings from the SC and CGIAR Secretariats on relevant recent developments in the CGIAR and the Centre being reviewed, covering both technical and programmatic matters, and matters on governance, organization, finance and human resources.

The Panel holds internal briefings throughout the Initial Phase and, by the end of the visit, produces an outline of the report, including assignments for drafting the report sections. The recommendations of the previous EPMR and the Center's initial and updated responses to them are the Panel's point of departure, and the Panel provides an assessment of the progress on implementation in an appendix to the report.

During the Initial Phase the Panel Chair should request from the Centre any additional information and documents deemed necessary for the Panel's work.

Field Visits

The Panel conducts a limited number of field visits as judged necessary by the Panel Chair in consultation with the Centre. The CCER panel itineraries may influence the choice of the EPMR field visits. Small Panel sub-groups conduct these visits, each visit lasting about 3 days. The purpose of these visits is to provide a realistic assessment of the Center's field operations, working conditions, and interactions with NARS and others in the region. The Panel is encouraged to prepare a check lists for the visits so that the sub-groups gather similar information relevant for the report's conclusions.

One purpose of the field visit is for the Panel to interact with Centre staff posted outside of HQ. Centre staffs are also responsible for logistical arrangements. However, Centre staff does not participate in substantive discussions with country officials, clients or stakeholders. Centre HQ staff do not accompany the Panel during field visits.

Main Phase

The Main Phase of the review lasts about 10 days and takes place at the Centre HQ. By the time the Panel gathers for the Main Phase, first drafts of virtually every section of the report will have been shared with the entire Panel. It is desirable that comments to the first drafts will also have been circulated among the Panel. This is essential to enhance the Panel members' contributions to and agreement of the contents of the entire report and to free time for Panel discussions on the most important strategic issues, findings, conclusions and recommendations. The Panel members also need time to interact with key staff members for validating their hypotheses and confirming the information that forms the basis of their assessment. All Panel members need to agree on the final chapter drafts which are then shared with the Centre management to ensure their accuracy and factual correctness. The Chapter relating to Board function is shared in confidence with the Board Chair for factual correctness. Also an executive summary and the key recommendations are shared with the Centre management before the formal presentation to the Centre staff.

At the end of the visit the Panel Chair presents the main findings and recommendations to the Centre management and staff. The Centre may invite a Board member to be present. The report is not distributed to the Centre.

The final report is completed within two weeks from the main visit. It is expected that the Panel has fully finished writing the chapters and what remains to be done is editing, formatting and compilation of the annexes. The Panel Chair and Secretary finalize the report interacting with the members as necessary. The Panel Chair submits the report to the SC Chair and the CGIAR Director, copied to the Centre.

The Panel's Report

The report is expected to be succinct (less than 100 pages) and written in plain language, focusing on assessment of Centre performance, in terms of research performance, management and governance, and strategic issues. The Panel is expected to make an independent assessment based on its own observations and other information available to it, particularly the evidence provided through CCERs.

The report comments on the effectiveness of the Center's internal review system on which the EPMR was based, and on how well the Centre has addressed the recommendations of the other reviews commissioned by the Centre. Every EPMR should have sections briefly addressing these two topics.

The report should make a limited number of clear recommendations on the most significant issues faced by the Centre (or the CGIAR) to act upon. The recommendations should be clearly articulated, realistic and doable in terms of implementation. Where those recommendations require additional resources, the Panel will also recommend what activities could be foregone. EPMR Panel may also identify areas of Centre activity where a follow-up study (e.g. CCER) would be desirable.

Assessment of Quality and Relevance of Research

Assessment of the quality and relevance of the Centre and its research programs are among the most important components of an EPMR. Furthermore, the PM system requires an assessment of the quality of Centre research. The SC will provide the Panel with a set of criteria to be used by them to provide this assessment. In order to strengthen a systematic approach to this assessment by very different Panels evaluating very different Centres, the SC requests the Panel to provide both a qualitative and quantitative assessment for each criterion. The SC will use the Panel's assessment to provide the input into the PM process.

Response and Follow-up

The Centre Board and Management submit a formal written response to the EPMR report, addressed to the SC Chair and the CGIAR Director. Their response states the Center's agreement, or otherwise, with each recommendation and outlines the actions proposed for implementing the recommendations.

The SC discusses the report and the Centre response in the presence of the Panel Chair, Centre Board Chair and Director General. The SC prepares a commentary focusing on the programmatic aspects of the Report, and the CGIAR Secretariat prepares commentary focusing on governance and management. The commentary should provide an assessment of the quality of the EPMR report and an endorsement of all the recommendations or justification for not endorsing specific recommendations.

The EPMR report, the Centre response, the SC commentary and the CGIAR Secretariat commentary are then submitted to the ExCo, which formulates its recommendations to the CGIAR for discussion and endorsement at AGM.

In the subsequent MTPs, the Centre will report on actions taken to implement the Group-endorsed recommendations, including real changes in the MTPs of the projects and programs, until recommendations have been fully implemented. The SC and the CGIAR Secretariat will include an assessment on the implementation of the EPMR recommendations in their MTP commentary to ExCo and the Group.

The Panel's assessment of the Center's research quality will be incorporated into the PM process and be effective for the period between EPMR reviews. In the case where the PM assessment is poor, the SC will, based on the evidence of change at the Centre review the PM assessment in the interval between the EPMR processes.

A Mid-Term Review can be considered as an appropriate mechanism to monitor closely the Center's handling of major concerns raised by the EPMR.

b. Terms of Reference for the Financial Management Consultancy

Within the context of the Terms of Reference (TOR) for the external review of the International Potato Centre or Centro Internacional de la Papa (CIP), the review panel requires an independent expert review of financial resource and risk management aspects of the Center's overall operations.

To aid the panel in its work, the Consultant will review and critically assess the efficiency, effectiveness, and overall soundness of the management of CIP's financial, physical, and informational resources.

This review is expected to take approximately 12 working days (of which at least 5 days will be spent at the CIP headquarters in Lima, Peru).

The review will specifically address the following topics:

The adequacy of the Centre Board's oversight of financial management issues;

the adequacy of the Center's financial controls, records and record-keeping, funds management, investment guidelines, banking arrangements, and the reporting of financial information throughout the organization;

The sufficiency, quality, integrity, and cost-effectiveness of the Center's internal and external audits. The reviewer will examine recent reports, including Management Letters, to judge relevance, completeness, and compliance by management with the recommendations contained therein;

An assessment of the financial aspects of the Center's human resource management practices and policies,

A review of the adequacy of current provisions for repairs, maintenance and replacement of physical plant and equipment; and

A review of the risk management process or system in place (by both Centre Board and Management).

The Consultant will commence work in Lima around April 23-27, 2007. He/she will work closely with and report directly to the panel member with overall responsibility for reviewing Centre governance/ management/finance aspects, and submit a written report that summarizes the findings and any recommendations, in an agreed format, by May 15, 2007.

Annex 3
Summary of Panel Comments to the
List of Strategic Issues for the 6th International Potato Centre (CIP) EPMR

Overall size of the Centre is now about 70% of its 1990 size, the time when the Centre reached its peak size and focused entirely on potato and sweet potato improvement. Now with the much smaller budget CIP is engaged in a broader agenda (e.g. Andean roots and tubers crops, urban and peri-urban agriculture, natural resource management, agriculture and human health). Given the reduced budget, is this the best strategy or should CIP continue to focus on its core commodity research?

Panel Comments:
In its Report, the Panel has argued extensively (and has made appropriate recommendations) about the need for CIP to concentrate better on its basic motto: Food and cash for the poor potato/ sweet potato farmers through potato/sweet potato new technologies and the policies
And institutions related to these commodities.

CIP is doing too many things. It should limit itself to a few where it has the comparative advantage and/or which form the basic mandate of CIP (for example genetic resources). Development of improved genotypes and backstopping NARS for production of healthy seed of the recommended varieties should get the top priority for having practical impacts on potato production and productivity in the various regions. Research in frontier areas of advanced molecular biology, which needs large amounts of resources, and where some advanced laboratories in the developed world have comparative advantage should not be ventured upon by CIP. The assured unrestricted funds should be used only for basic programs addressed to the problems of developing countries. Programs on crops other than potato and sweet potato, and those related to urban and peri-urban agriculture, and human health etc., can be kept in low key or completely abandoned if possible.

According to CIP's own assessments, sweet potato research has almost as much potential as potato to alleviate poverty in developing countries. However, in recent years, CIP has increased the share of resources devoted to potato, from a historical 60-40 ratio to one of 75-25. In order to maximize the Center's likely impact on the poor, how should CIP balance its research on potatoes versus sweet potatoes? How does China's emerging research capacity affect that balance?

Panel comments:
The Panel has pointed out the need to allocate a higher percentage of CIP´s budget to sweet potato. In Chapter II of the Report an example of robust research priorities is presented along with a suggestion on a 60:40 ratio resource allocation between potato and sweet potato, while keeping in mind that potato has a much wider-ranging capability than sweet potato.

In CIP's strategic plan, China is part of CIP's mapping of potato/sweet potato areas coinciding with the prevalence of poverty. Furthermore, the relative magnitude of China's funding, the type of funding (restricted versus unrestricted), and the share of funds between both crops will definitely affect the budget percentages spent on each crop. As long as CIP funding is not mainly in the restricted category, China's research capacity need not affect the balance between both crops. But things could change if China's decides to provide CIP with much more operational funds to sweet potato research than it does to potato research. (See Annex 9.)

Although Latin America, especially the Andean countries, is now the target area for more than 40% of CIP's research, according to CIP's own assessment, this region accounts for only 4% of likely potential impact on poverty reduction. The major opportunities for CIP to help alleviate extreme poverty seem to lie in Sub-Saharan

Africa and Asia (western China and south Asia). How should CIP reallocate its research resources to maximize its potential impact in Africa and Asia, while maintaining focus on key global issues?

Panel comments
While regional budget shares can be misleading, since they management indicators, and therefore only proxies for outputs and outcomes, and while budget cuts have caused CIP to focus more on headquarters operations, LAC is certainly pervasive in CIP's research, partly due to the fact that this region continues to be a target for some donors, including Canada (IDRC) and Switzerland. CIP's greater opportunities to improve potato/sweet potato agriculture certainly lie in Africa and Asia. More resources need to be allocated to South Asia and Sub-Saharan Africa where both potato and sweet potato are major crops, and where low productivity is pervasive owning to non-availability of required types of varieties, quality seed, and due to problems of drought, salinity, heat, bacterial wilt, Colorado potato beetle, and of course late blight. CIP should have strong Regional Programs in these regions, in order to be able to tackle these problems on a large scale basis, in association with NARS.

CIP's latest MTP reflects significant budget cuts for 2007, including for Project 2 on Genetic Resources Conservation and Characterization (by 52%), and to Project 8 of the GMP (by 70%). What is the rationale for, and expected consequences of these cuts?

Panel comments:
"Genetic Resources Conservation and Characterization" of potatoes and sweet potatoes is the international responsibility of CIP. Cuts in the budget for this project will not only affect CIP, but also the various NARS who are dependent on this international gene bank for their breeding programs. For example CIP still needs to collect the 50 or so remaining species that are required to complete the 200 known species of potato that represent the full range of the biodiversity of the species. Furthermore, CIP's characterization work remains only incipient.

The Panel has concluded that Project 8 (Global Mountain Program -- GMP) has a negligible contribution to CIP's core areas of work, and has recommended that CIP no longer convene the GMP. The repercussion of that budget cuts for CIP's work should therefore be negligible.

CIP's own assessments indicate that pervasive institutional weaknesses in target regions severely constrain adoption of the Center's technologies and the development of potato seed systems. Are CIP's partnerships and capacity building efforts effectively tackling these constraints? In these partnerships, is CIP likely to be able to delegate more of its locally focused activities to the collaborating NARS?

Panel comments:
This has always been a challenge for the CGIAR. From the outset, CIP has assisted and helped strengthen NARS research capabilities through regional training programs. One clear positive result observed by the Panel is that CIP´s former trainees currently manage several country partnerships. CIP should keep developing collaborative programs for potato and sweet potato by identifying willing and active NARS, NGOs, private seed companies etc. Clear exit strategies should be in place for CIP so as to the timely transfer of responsibilities to selected components of NARS.

Have clear impact pathways been developed for CIP's NRM research? What is the value added (global impact vs. local relevance) of CIP's research on NRM? To what degree is CIP's research on agriculture and human health (Project 6), which focuses mainly on technologies that are likely to reduce pesticide use and exposure, with consequent positive health and environmental impacts in Andean Communities, reflect the Center's comparative advantage? Is such research likely to produce IPGs?

There are three questions under this heading. On the first question, the simple answer is, no. That is not to say that their work has been wrongly targeted. It is a simple statement that CIP has not formally conducted the required priority-setting exercise that would define the boundaries of and balance of emphasis in their research. On the second question, the SC can be reassured of the quality of the work being done and of its potential for local relevance across several regions. There are instances cited in this Report showing the adaptability of the output. As a general principle: Where the science is good, it also has a wider applicability. However, it may take further work of the 'outreach'-type to properly inform policy-makers.

Regarding the question on A&H, the Panel has recommended to phase out this Division since its value added to CIP's core work is low or not existent, at least in terms of IPGs.

Does CIP possess sufficient social science capacity for assessing research priorities and impact?

Panel comments:
The answer to the SC question is no. This Panel has made an extensive analysis of CIP's the current socio-economics capacity, and has concluded that the situation in terms of staffing and priorities has deteriorated compared to the 5th (2002) EPMR assessment. More specifically, the Panel concludes CIP's social science capacity has declined substantially, particularly in the last two years, and is today serious constraint to CIP's socio-economics work.

Two years ago, CIP dropped its "project" focused research structure and adopted one based on a set of core research divisions and partnership projects. Under the new structure, about 60% of the Center's research resources are concentrated in four units (two divisions and two partnership projects), with the remaining resources divided among the other 10+ divisions, partnership projects and country projects. Is CIP's current organization structure balanced and integrated?

Panel comments:
First of all it is worth noting that CIP's previous "project" approach structure was also characterized by budget imbalance, with a couple of projects taking 60% of total research budget. The potential advantage of the new structure lies in the development of a better integration of research by having a smaller number of units (5-6 units and not 10 or more). But, as discussed extensively in this Panel's report, this advantage has been jeopardized by two facts: First of all, Divisions house resources that are not exclusively research resources; and second, not all Divisions are associated clearly with the production of research outputs, the key criterion to guide the decision to establish a Research Division.

There have been significant shifts in expenditures by region over the past 5 years, the most drastic of which was in 2005. Were there any non-programmatic issues involved?

Panel comments:
Panel comments to Strategic Issue number three apply here as well. The shifts in expenditures by regions obey basically to the number of restricted projects that opened in the different regions.

In 2005, CIP was the only centre whose is Board did not have an ongoing close association with any centre. What are the arguments for CIP´s disagreement to the governance stripe review's recommendation to explore joint Board membership with other CGIAR centres?

Panel comments:
The Board is actively seeking a new Board member who is serving on another Centre Board. A name was proposed to the CG Secretariat but rejected. The Board is continuing its search.

What is the panel's assessment of the process employed by the CIP Board in conducting its annual evaluation of the Centre DG? Note that the Board has not agreed to the governance stripe review's recommendation to seek a wide range of inputs including feedback from Centre staff.

Panel comments:
The process of evaluating the performance of the Director General was observed by two of the EPMR Panel members. Information on the Director General's work plan and performance was fully discussed by the Board, along with discussion and the decision on compensation. The Board does not use other sources of input such as a modified 360 degree feedback process for the Director General's performance. The Panel in its report suggests this input could be useful for both the Board and the Director General. All Board members participated in the discussions and on the nature of the feedback to be provided by the Director General by the Board Chair. The process was handled well.

What has been the extent of CIP Board's involvement in the Center's human resources policy development? CIP did not discuss/review the center's human resources policies in 2004-2005.

Panel comments:
The Board has been less informed on human resource matters than is appropriate and needed. Some Board members have repeatedly expressed a desire for more discussion of human resource issues and now, at its most recent 2007 Board meeting, proposed a detailed set of statistic that management must provide and that the Board should review once a year, including those on gender and diversity, to monitor human resources. There is no separate grievance policy like that endorsed by the CBC, where the Board serves as a Court of Appeals beyond the Director General. The Panel has suggested the adoption of such a policy. The Centre is currently drafting a Whistle Blower policy. At a Board retreat in 2006 the Board made a decision that in the next 3 – 5 years the number of women IRS should increase from 18% to 30% and the number of IRS from the South should increase from 40 – 50%.

What were the most important actions taken by the Board in recent years for improving its own performance? The results of the 2005 performance measurement exercise showed that CIP's statements on this issue were rated below the system's average by the peer-review panel.

Panel comments:
Under the leadership of the present Chair, the CIP Board has paid considerable attention to governance issues, procedures and training, and has become more inclusive in its decision-making. For example: (1) It has adopted two policies to clearly establish Board and Management boundaries: Accounting policy 1—Matters Reserved for the Board of Trustees Approval, and Internal Accounting Policy 2—Matters delegated to the Director General. The Panel found the intent of the policies to be excellent; (2) the Board has implemented its 2006 decision to hold four Board meetings a year, two face-to-face and two via telephone conference call. This has reduced the responsibilities of the Executive Committee and diminished the likelihood that others on the Board are "second class citizens"; and (3) New Board members have attended the CGIAR Board training.

Has the lack of a full-fledged MIS (intended to replace the current CIPFIS) adversely affected the Center's ability to carry out some of these functions effectively?

Panel comments:
Yes. The Centre continues to pursue *ad hoc* solutions which are no longer appropriate to today's technology. Once again, in addition to the 5th EPMR and the 2005 CCER on Financial Controls and Reporting, the Panel is recommending that CIP invest in a commercially available ERP suitable to its requirements to enable both research and corporate service staff to work efficiently and accurately.

What is the status of the implementation of the following 2005 CCER´s recommendations: 1) development of a long-term capital budget and financing plan, and 2) increasing recovery of personnel costs from restricted core project budgets? On item 2), have guidelines and tools been developed for restricted project budgeting?

Panel comments:
Regarding recommendation 1: The Centre has developed a long-term capital budget and financing plan, but has not taken steps to implement the plan in its 2006 or 2007 budgets. This Panel has made the following recommendation in this respect: "Because of the inadequacy of CIP's practice of funding capital expenditures only to the level of its annual depreciation cost, ***the Panel recommends*** that CIP budget annually and explicitly, for Board approval, its capital expenditures, based on the Center's actual needs, and that the Centre allocate the necessary funds to respond to the most urgent needs as identified in its recently prepared capital assessment plan".

Regarding recommendation 2: CIP is increasing recovery of personnel costs from restricted core project budgets (and for that matter increasing capital purchases from restricted projects.

Regarding recommendation 3: Guidelines and tools have been developed for restricted project budgeting.

Annex 4
Itinerary of the EPMR Panel (Schedule of the Initial and Main Phases and Field Visits)

10-14 April 2007	**Initial phase**: entire Panel, including Panel consultant and Panel secretary, visit CIP headquarters in Lima, Peru.
7-27 May 2007	**Field visits**: Donald MacKerron and Edgardo Moscardi: Vietnam, Laos, and Indonesia; Carlos Pomareda: Ecuador, Peru and Bolivia; Jay Gopal and Malachi Akoroda: Kenya, Uganda, Tanzania; Jay Gopal: Tajikistan, Azerbaijan, Uzbekistan, Georgia;
18-29 June 2007	**Main Phase**: entire Panel visit CIP headquarters in Lima, Peru.

Annex 5
People Contacted/Interviewed by the Panel and the Consultant

Stakeholders

David Spooner, Professor, University of Wisconsin, USA
Jetse J. Stoorvogel, Professor, Wageningen Agricultural University, Netherlands
John Antle, Director, Trade Research Centre Montana State University, USA
Corinne Valdivia, Research Associate Professor, University of Missouri-Columbia, USA
B. Panis, Professor, Catholic University of Leuven (KUL), Belgium
Carlos Quiros, Professor, University of California-Davis, USA
Mary Penny Roberts, Director, Instituto de Investigación Nutricional (INN), Peru
Robin Buell, Associate Investigator, the Institute for Genomic Research (TIGR), Italy
Gebremedhin Woldegiorgis, Coordinator, Root and Tuber Crops Research Program, Ethiopian Agricultural Research Organization (EARO), Ethiopia
William Fry, Professor of Plant Pathology and Senior Associate Dean, Cornell University, USA
Guillermo Frias, Director Regional Cajamarca, CARE-Peru, Peru
S.M. de Jong, University of Utrecht, Netherlands
Miguel Solanes , Senior Advisor Comisión Económica para América Latina y el Caribe (CEPAL), LAC
Alexis Vásquez Director Esecutivo, Instituto Nacional de Innovación y Transferencia en Tecnología Agropecuaria (INTA), Costa Rica
Juan Castillo, Head, Department of Genetics and Crop Improvement, INCA-Cuba, Cuba
Muhammad E Tusneem, Chairman, PARC Pakistan Agricultural Research Council, Pakistan
P.S. Naik, Potato Coordinator, All India Coordinated Potato Improvement Project (AICPIP), Shimla, India
Luisa Guinand, Coordinator - Programa de Medio Ambiente y Desarrollo Sostenible Comunidad Andina de Naciones (CAN), LAC
Jorge Chávez Lanfranchi, Director, Instituto National de Investigacion y Extension Agraria (INIEA), Peru
Calisto Bias, Director, Instituto de Investigação Agrária de Moçambique, Mozambique
Seyfu Patema, Excecutive Officer, ASARECA
Ligia Casanova Teniente al calde, Deputy Mayor, Municipalidad del C.P. Santa Maria de Huachipa, Peru
Dindo Campilan, Coordinator, Users' Perspectives with Agricultural Research and Development (UPWARD), Philippines
Philip Ndolo, Coordinator, National Potato Program, Kenya Agricultural Research Institute (KARI), Kenya
Marcelo Huarte , Coordinator, National Potato Program, INTA-Argentina, Argentina
Nguyen Thi Tinh, Animal Nutritionist, National Institute of Animal Husbandry (NIAH), Vietnam
Wilder Trejo, PresidenteConsejo Nacional de Camélidos Sudamericanos del Perú (CONACS), Peru
Mohammad Sharif Sharif, Deputy Minister for Agriculture, Ministry of Agriculture, Afghanistan
Pham Xuan Tung, Dalat Research Centre for Food Crops, Food Crops Research Institute, Vietnam (FCRI), Vietnam
Constancio de Guzman , Urban Agriculture National Research, Development and Extension Network (UANRDEN), Philippines
Nasona Bouwe, Head, Tuber Crops Program INERA, the Democratic Republic of the Congo
Rajendra Khanal, Project Coordinator, CARE Nepal, Nepal
Tokhtamurat Sharipovic Bazarov, Vice-Chairman, Association of Farmers and Dekhan of Uzbekistan, Uzbekistan
Veronique Gerard, Belgium Technical Cooperation (BTC), Belgium

Mizrob Amirbekov, Deputy Manager and Naturale Resources Trainer, Aga Khan Foundation, Tajikistan
Millán López, Executive Director, Fundación Darío Maya Botero, Pensilvania, Colombia
Miguel RenteríaDirector - Cajamarca Program, Centro de Investigación, Documentación, Educación, Asesoramiento y Servicios (Centro IDEAS), Peru
Fernando Gast, Director General, Instituto Alexander Von Humboldt (IAvH), Colombia
Martin Vega, Director, Equipo de Desarrollo Agropecuario de Cajamarca (EDAC), Peru
Malkhaz Chinchilakashvili, Chairman, Mountain Area Development International (funded by IFAD), Georgia
Edrisa Sekiyanja, Director, Bajabasaga, Uganda
Nzola Mahungu, Network Coordinator Southern Africa Regional Research Network (SARRNET)
Jorge Reinoso, Director, Centro de Investigación de Recursos Naturales y Medio ambiente (CIRNMA), Peru
Miguel Carranza Ibañez, Director Cooperación y Desarrollo, Peru
Fiona Yeudell, Nutritionist, University of Ryerson, Toronto, Canada
Antonio Torres Salvador, Profesor, Universidad de Valencia, Spain
Luis Alberto González Díaz, Plant Breeder, Centro Investigacion Agropecuaria -Santa Clara (CIAP) Cuba
Luis Cisneros, Professor Texas A&M University (TAMU), USA
Bernardo Rivera, President of the University, Universidad de Caldas, Colombia
Ramiro Ortega, Professor, Universidad Nacional San Antonio Abad del Cusco (UNSAAC), Peru
Andrés Felipe Betancourth, Rector Académico, Instituto de Educación Superior Colegio Integrado Nacional Oriente de Caldas - IES-CINOC, Pensilvania, Colombia
Ena Jaimes Espinoza, Directora de Climatología Directora de Climatología Servicio Nacional de Meteorología e Hidrología of Peru and Bolivia (SENAMHI), Peru
Xiu-Qing Li, Research Scientist Agr. And Agri-Food Canada, Canada
Rose Njeru, Plant Pathologist/ virologist, Nairobi University, Kenya
Colin Cargill, Professor, South Australian Research and Development Institute, Adelaide Australia
Maximina Monasterio, Professor, Instituto de Ciencias Ambientales y Ecológicas (ICAE), Universidad Los Andes, Venezuela
Pedro García Herradón, Professor, Universidad de Santiago de Compostela, Spain
Yasintha Muzanila, Dean of Faculty of Science and Environmental Mgt. Sokoine University of Agriculture, Tanzania
Athanase Bopda, Geographer, University of Yaounde, Cameroon
Miguel Ibáñez Talegón, Professor, Universidad Complutense de Madrid, Spain
Dindo Campilan, Coordinator, Asian Network for Sweet potato Genetic Resources (ANSWER) (China, Indonesia, Vietnam, Philippines, Thailand, South Korea, Malaysia, India, Japan, Sri Lanka and Papua New Guinea), Indonesia
Mieke Faber, Network Chairperson, VITAA, South Africa
Dao Huy Chien, Director, RCRC, Vietnam
Antonio Castello, Viceministro, Ministerio de la Produccón (PRODUCE), Peru
Dai Qiwei, Director, Jiangsu Academy of Agricultural Science (JAAS), China
David Spooner, Professor (and Research Botanist), University of Wisconsin, USA
Richard Visser Chair Laboratory of Plant Breeding & BU, Wageningen Agricultural University, the Netherlands
Carlos F. Quirós, Professor and Geneticist, University of California, Davis, USA
Gebremedhin Woldegiorgis, Head of the national potato research program, Ethiopian Agricultural Research Organization (EARO)
Theresa Fulton, Managing Editor, Cornell University, USA
Dao Huy Chien, Food Crops Research Institute, Vietnam (FCRI), Vietnam
Nguyen The Yen, Head, Department of Farming Systems, RCRC,Vietnam

Amal K. Roy, Principal Technical Officer, Mennonite Central Committee (MCC), Bangladesh
Micheal de Vries , Sector Coordinator, ANRS CARE, Bangladesh
Rouser Sahadat Ali, Managing Partner, SWARUP Agriculture, Bangladesh
F H Abed, Executive Director, BRAC Centre, Bangladesh
Qazi Khaze Alam, Director Natural Resources, PROSHIKA, Bangladesh
Himadri Kumar Saha, Co-ordinator, PROSHIKA, Bangladesh
Shah Alam, Managing Director, Grameen Krishi Foundation, Bangladesh
S M Neamatullah, Managing Director, Rantic Limited, Bangladesh
Aminul Alam, Deputy Executive Director, BRAC Centre, Bangladesh
Mohammad Ali, Manager, Food Production, Practical Answers to Poverty, Bangladesh
Syed Samsuzzaman, Director, Agricultural, Economic and Environmental Services, Bangladesh
Kazi Abdul Quadre, NGO Liaison Officer, BCS (Agril.), Bangladesh
Markus Waldvogel, Counselor (Development), Swiss Agency for Development and Cooperation, Bangladesh
Aminul Islam, Market and Processing Consultant, Farm to Market Enterprise Development Project, Bangladesh
Matimur Rahman, Director General, Bangladesh Agricultural Research Council, Bangladesh
Abdul Razzaque II, Chief Scientific Officer (Crops), BARC, Farm Gate, Bangladesh
Abdur Razzaque, Director, Agricultural Information Centre (AIC), Bangladesh
Vishaka Hidellage, Director, South Asia Head office, Practical Action, SrilankaC Kudagamage, Director General. Department of Agriculture, Peradeniya, Srillanka
Jinadarie Zoysa, Director, Horticultural Research and Development Institute, Peradeniya, Srilanka

Donors
Franklin C. Moore, Director Office of Environment and Science Policy, USAID, USA
Beate Wilhelm, Assistant Director General, Thematic and Technical Resources, Swiss Agency for Development and Cooperation (SDC), Switzerland
Hèléne Corneau, Director, United Nations and Commonwealth Programs, Canadian International Development Agency, Canada
Hans Wessels, Head of Natural Resources and Ecosystem Management, Ministry of Foreign Affairs, the Netherlands
David JB Howlett, Team Leader, Department for International Development (DFID), UK
Christoph Kohlmeyer, Federal Ministry for Economic Cooperation and Development (BMZ), Germany
Marc Debois, Head of Sector – Agriculture, Food Security and Rural Development, European Commission
Eva Ohisson, Head, Natural Sciences for Sustainable Development, SIDA, Sweden
Maria Waltraud Rabitsch, Poverty Reduction, Rural Development, Decentralization, Austrian Development Agency (ADA), Austria
Mario Gómez, Director General, INIA (Instituto Nacional de Investigación Agraria), Spain
Nam-Jin Chung, Associate Director, Rural Development Administration (RDA), Korea
Ricardo Sevilla, Executive Coordinator STC-CGIAR, INIEA (Instituto Nacional de Investigación Agraria), Peru
Lijian Zhang, Vice President, Chinese Academy of Agricultural Sciences (CAAS), China
Mangala Rai, Secretary (DARE) & Director-General, ICAR (Indian Council for Agricultural Research), India

CGIAR
Douglas Pachico, ADG (Research), CIAT
William Erskine, ADG (Research), ICARDA
Mark Rosegrant, Director, Environment and Production Technology Division, IFPRI

Joachim von Braun, DG, IFPRI
Carlos Seré, DG, ILRI
Dennis Garrity, DG, ICRAF
Mahmoud Solh, DG, ICARDA
Joachim Voss, DG, CIAT
Manny Lantin, CGIAR Secretariat
Namita Datta, Governance Adviser, CGIAR Secretariat
Shey Tata, Finance Adviser, CGIAR Secretariat
Frank Rijsberman, DG, IWMI
John McDermott, Deputy DG, ILRI
Howard Bouis, Director, HarvestPlus Challenge Program, IFPRI
Jean-Marcel Ribaut, Generation Challenge Program, CIMMYT
Pamela George, Program Manager, Water and Food Challenge Program, IWMI
Carlos Correa, University of Buenos Aires, Argentina
Kwesi Atta-Krah, Deputy DG, Bioversity
Mohamed Bakarr, ADG, ICRAF
Peter Trutmann, Coordinator, Global Mountain Program, CIP
Hector Cisneros, Coordinator, CONDESAN Partnership Program, CIP
Emile Frison, DG, Bioversity International
Victoria Henson-Apollonio, Head, CAS-IP
Enrica Porcari, Chief Information Officer, ICT-KM
Ruth Meinzen-Dick, Coordinator, CAPRi
Jacqueline Ashby, Coordinator, PRGA

CIP Board of Trustees
James Godfrey (Chair)
Alexander Boronin (Russia)
Ruth Egger (Switzerland)
Song Jian (China)
Pauline Kuzwayo (South Africa)
Victor Palma (Peru)
G. Edward Schuh (USA)
Edward Sayegh (Lebanon)
Madhura Swaminathan (India)
José Valle-Riestra (Peru)

Ex-CIP staff
Keith Fuglie
Richard Sawyer

Annex 6
List of main documents reviewed by the Panel and Consultant

Annual Reports 2002, 2003, 2004, 2005
MTPs 2003-2005, 2004-2006, 2005-2007, 2006-2008, 2007-2009, 2008-2010
SC commentaries on Center's MTPs
Report of the Fifth External Program and Management Review of CIP, 2003
ToR and Guidelines for External Program and Management Reviews of CGIAR Centres
CIP Vision: Preserving the core, stimulating the progress, 2004
Research Priority Assessment for the CIP 2005-2015 Strategic Plan: Projecting Impacts on Poverty, Employment, Health and Environment, prepared by Keith Fuglie, October 2006.
CIP update to the recommendations of the 5th EPMR, 2006
A Preliminary Report of the Allocation of CIP Research in 2005, prepared by Keith Fuglie, 2006
Centre-Commissioned External Reviews:
CCER: CIP Strategies on Development and Deployment of Genetically Engineered Potatoes and Sweet Potatoes, June 2005 & Center's Progress Report on Implementation of External Panel Recommendations of the CCER
CCER: Review of CIP Financial Control and Reporting Systems, April 2005 & Center's response to the External Review on Financial Systems
CCER: The Centre Commissioned External Review for the NRM Program of CIP, February 2007 and CIP response and implementation strategy
Terms of Reference for the CCER on Natural Resources Management
The Strategic Plan for Research of the International Potato Centre 2006-2016
Donor-Commissioned External Reviews:
Monitoring mission of CGIAR projects co-funded by the European Commission-Project 7B: Conservation and characterization of root and tuber crop genetic resources, 2003 & Progress Report on Implementation of External Panel Recommendations
Papa Andina- Resultados de un Proceso de Reflexion y Evaluacion, October 2005 & Response of the Executive Committee of Papa Andina
Notes for Panel Briefing (Source: CGIAR Secretariat, Finance Documents)
CGIAR Research Priorities 2005-2015.
List of CIP's professional staff
CIP List of Agreements for Cooperative Activities with other Centres and Institutions
List of CIP's sponsored projects
Agreement for scientific cooperation between the government of Peru and North Caroline State University
Statutes for the International Potato Centre
Amended Statutes of the International Potato Centre
Agreement for the Recognition of the International Legal Personality of the International Potato Centre (CIP)
Ratification of the Agreement between the Government of Peru and the International Potato Centre
Agreement between the Government of the Republic of Peru and the International Potato Centre
Table of Board members from 2002-2006
Chronology of Board meetings
Minutes of CIP Board meetings
Table showing staff benefits and allowances
Table showing personal data on professional staff by program
Staff turnover 2001-2006
Local compensation survey
External Audit Reports 2002 till 2005 & Management Letters
CIP Financial Reports 2002 till 2005

Internal Audit Reports (2006) on fixed assets, health insurance, procurement, travel expenses
CIP Information and Report on the Audit to the Financial Statements and Complementary Information as of December 31, 2005 and 2004
Research Highlights 2002-2005
Reference to CIP in recent CGIAR documents
CIP Publications 2002-2006
Location of CIP's offices
Gender and Diversity Report, December 2006
CIP Investment Policy
CIP Expenses by Major Categories
NRS Staff Recruited by Category
Time allocation of Internationally-Recruited Staff (IRS) by Project
Financial Statement 2002-2007
Staffing trends 2001-2006
Funds including staff salaries allocated by region (by year)
Number of staff distributed by region (by year)
Percentage of staff turnover
Funds including staff salaries allocated in SSA
Salary and benefit comparison with related Institutions
Organization and Functions Manual: Logistics Department Area: Management and Logistics
Report of the Program Committee
CIP's gender distribution at different organizational levels
DG's residence maintenance expenditures
MTP 2008-2010 Proposed annual allocation of funds for Priority Area
Equivalent scientist-year allocated to Social science research at CIP (2006)
CIP Distribution of Expenses
Finance and Administration Organizational Chart
Exam of financial statements up to 31 Dec 2006-2009
Accounting Unit Organizational Chart
Job Description of General Accountant
Financial Procedures Guidelines, March 2007
Financial Information System
ITU Note on hardware
Inventory 2007 of computers and laptops
CIP Corporate Systems: Backup procedures
2007 ITU Development Work plan
Information Technology Unit: Team and Staff Work plan for 2007
Logistics- job description
Accounts receivable- Donor restricted, April 2007
Detailed job descriptions for selected staff members
Budget Monitoring Operation, March 2007
Cash and Investment Positions, 2007
CIP Framework and Administrative Policies
Donations Received Report, April 2007
Financial Report, December 2006
Financial Report, March 2006
Financial Report, June 2006
Financial Report, September 2006
Implementation Plan for Internal Audit Recommendations, April 2007
Internal Audit Function
Investments, 2007

ITU Work Reports
Budget Monitoring Operation, April 2007
Staff turnover rates 2002-2006
Staffing trends 2002-2006
Staff expenses by major category
Audit Committee Chair Assessment Questionnaire
Performance Assessment Questionnaire- Board Audit Committee
Nominations Committee Chair Assessment Questionnaire
Performance Assessment Questionnaire- Nominations Committee
Program Committee Chair Assessment Questionnaire
Program Committee Performance Assessment Questionnaire
Risk Oversight Chair Assessment Questionnaire
Performance Assessment Questionnaire- Risk Oversight Committee
Emergency Action Plan- Claims of mishandling of genetic resources and GMOs
Emergency Action Plan- Infringement of intellectual property rights
Emergency Action Plan- Physical disasters
Emergency Action Plan: Social unrest and political upheaval
Emergency Action Plan: Financial unexpected loss or deficit
Statement of Account
Treasury Organizational Chart
Treasury Personnel Responsibilities
Treasury Analysis of Procedures
Policy for opening and managing bank accounts
CIP Investment Policy
Finance Department-Organizational Chart
Status of Donor- Project by funding source, April 2007
Budget Monitoring Operation, December 2006
Budget Monitoring Operation, March 2007
Project Approval Process
Budget Monitoring Operation, April 2007
Budget and Expenses
Budget Unit Organizational Chart
Income and Expenses, 2007
Expected Revenue and Status, 2006
Information Technology Unit Organization Chart
Information Technology Inventory, 2007
List of NRS Staff in HQ and regional offices
CIP Staff by category of recruitment and gender
Staff distribution by region by year
Staff distribution by theme
Logistics Policies & Procedures Manual scope
CIP FIS 2006: Requirements to be implemented in Administration and Logistics
Distribution of staff by nationality
Organizational Chart of the Human Resources Department
Policy of Spousal and Family Employment at CIP
Toward a New Vision and Strategy of the CGIAR
Monitoring and Evaluation System of the CGIAR
CGIAR Charter and Annexes, 2004
Report of the Stripe Review of Corporate Governance of CGIAR Centres
CGIAR Financial Guidelines Series 1-6

Reference Guides for CGIAR International Agricultural Research Centres and their Board of Trustees 1-7
A proposal for EPMR rating of scientific quality
Results of the CGIAR Performance Measurement Exercise, 2005, 2006

Annex 7
5th CIP EPMR Recommendations: CIP's Response and Panel Comments

Recommendation 1: Because of the need to improve the identity, visibility and effectiveness of the CIP potato breeding effort, the Panel recommends that the potato improvement activities be coalesced into a single project and that the leader be empowered (full financial, budgeting, and managerial accountability) to champion the development and delivery of a coherent breeding program that captures the full potential of all the resources available to CIP.

CIP's 2003 Response: The Centre respectfully acknowledges the intent of this recommendation. The Centre feels that the current configuration of our breeding efforts is working well, and that making changes at this time might not improve the effectiveness of the breeding program. The Board and management pledge to monitor the situation and to seek improved efficiencies, and will make corrections as necessary. Recognizing the value of external reviews, the Board proposes to undertake a Centre Commissioned External Review (CCER) in 2006 to re-evaluate the structure of our project portfolio vis-à-vis plant breeding. This will provide the Centre with sufficient time to test the present configuration (i.e., gather data for the CCER), and in turn will provide the next EPMR with an external look at the merits and drawbacks of various plant breeding configurations.

CIP's 2006 Updated Response: Fully implemented. One of the results of the CIP Vision exercise (see Recommendation 18), conducted from 2002-2004, was the re-structuring of CIP's research program. The current research program, which became operational in 2004, includes the Research Division of Germplasm Enhancement and Crop Improvement (MTP Project 3). This Research Division brings together CIP's breeding efforts for all commodities under the leadership of Division Leader, Dr. Merideth Bonierbale.

Panel's Comments:
Implemented and functioning. The response is accepted.

Recommendation 2. Because of the unique role of CIP as holder of vast genetic resources of its mandate crops, the Panel recommends that CIP urgently identify resources to establish a state-of the- art high-throughput genotyping facility that will enable it to fully exploit its genetic resources in the post-genomics era. Skills and competencies in the area of bioinformatics/computational biology must be strengthened.

CIP's 2003 Response: The Centre accepts the recommendation to establish a state-of-the-art, high through-put genotyping facility and will explore the human and financial resources implications of moving forward with this recommendation, including the implementation of collaborative arrangements with other institutions. We stress however, that the intention of creating such an initiative would be strictly in the interest of better serving the recipients of our research efforts, and with the purpose of contributing to solving poverty, nutritional and environmental problems in our client communities.

CIP's 2006 Updated Response: Fully Implemented. A high throughput (HTP) genotyping facility was established at CIP in early 2004 with special project funds from Spain and Germany. We purchased an automated sequencer needed to reliably produce high quantities of DNA fingerprints (Licor 43000 with 5 user licenses producing minimum of 480 DNA fingerprints per day). Simultaneously, we increased our capacity in DNA extractions by purchasing from Qiagen a tissue lyser devise using DNAeasy 96 plant kit, which processes 2 x 96 samples in 1.5 hours.
The main research activity of the HTP lab has been the production of micro satellite (SSR) marker data for potato for the Generation Challenge Program (50 SSR markers on 716 native potato genotypes and 2 mapping populations). Recently, a new research project has started to look at diversity of native

potatoes conserved *in situ*. By the end of 2005, we expect to produce a SSR marker data set for sweet potato.

Our capacity in bioinformatics was significantly increased (4 new assistants) in parallel with the acquisition of a high power computer (HPC) system, with Generation Challenge Program (CP) funds. And, one full-time internationally recruited scientist (IRS) is now leading the Research Informatics Unit (RIU). CIP has led the effort of installing the HPC for the Generation CPand in collaboration with the International Rice Research Institute (IRRI) is co-leading the identification and customization of additional software for the HPC. CIP has been recognized in the Generation CP bioinformatics community as a leader in geographical information systems (GIS), data-warehouse technology and certain best practices in programming and development for computational biology. New skills in bioinformatics were acquired through training given by a senior programer of the European Bioinformatics Institute in November 2004 (on web-services and EMBOSS). Several international collaborations have been initiated or revived through training events and visits to further strengthen capacity in: Expressed sequence tag/single nucleotide polymorphism (EST/SNP) pipelines (EMBRAPA, Brazil), in comparative genomics (National Clonal Germplasm Repository, Cornell) and genotyping databases (Scottish Crops Research Institute, Germinate). Funding for these activities is provided through a variety of collaborations under the Generation CP.

Panel's Comments:
Implemented and functioning. The response is accepted.

Recommendation 3. Because of the need for multidisciplinary approaches for sustainable improvement of the cropping systems under CIP's mandate commodities and limited resources for research, and the need to demonstrate impact, the Panel recommends that, within the overall strategic planning of the Centre, a priority setting exercise be conducted for NRM, using an appropriate methodology, to help focus the research agenda and develop a proper balance between process oriented and application oriented research, and between production systems based on CIP mandate crops on the one hand and livestock-pasture-based
Production systems on the other hand.

CIP's 2003 Response: The Centre accepts this recommendation and notes the following. We are fully aware of the challenging task of making the needed trade offs among natural resource management components and agricultural productivity-oriented alternatives. We will be including this topic in the visioning and priority-setting processes outlined in our response to the recommendations regarding Chapter 10 (see below). Because of the successful methodologies and tools that have been developed through the Center's NRM research to date, CIP is quite prepared to tackle this challenge and to implement applications-oriented research in conjunction with the most appropriate partners in the Andes and, on the global scale, through the Global Mountain Program.

CIP's 2006 Updated Response: Incremental implementation. NRM CCER was conducted in 2006. As part of the Visioning and Targeting Exercises (see Recommendation 18), we have targeted and prioritized research and intervention in potato and sweet potato production systems. In some of the highland potato production systems, livestock is one of the system components. However, work on mountain systems that do not include potato production is being phased-out.
As shown in the NRM log frame (MTP Project 5), described outputs clearly indicate that EPMR recommendations have been taken into account by the NRM Project, as there is an emphasis on the application of analytical methods and tools on CIP mandate crops. More than 70% of output targets included in the MTP deals with potato and sweet potato systems. The MTP indicates that most of the specific problems to be tackled by the project are related to the need to improve root and tuber crop statistics and yield forecasts in target areas with high population of resource-poor farmers and to enhance the capacity of complex systems to absorb shocks and maintain function, benefiting poor

farmers. As to application, several NARSs in LAC, Asia and Africa are already using analytical tools developed by the NRM Project for agro-ecological zoning and priority setting. The new Strategic Plan confirms the importance of NRM research in potato and sweet potato systems research. A CCER will be conducted during 2006 to obtain expert evaluation on our progress on this recommendation.

Panel's Comments:
The fact remains that the priority-setting exercise has not been done. The conclusions of the NRM CCER held in February 2007 confirmed this.

Recommendation 4. Because of the unique opportunity offered by CONDESAN and its very diverse partners in providing an excellent mechanism with a large number of watershed sites for testing research hypotheses and products, the Panel recommends that all CIP scientists work together in the CONDESAN benchmark watersheds and to use the CONDESAN mechanism for the development, evaluation and dissemination of integrated technologies, and policy and management recommendations.

CIP's 2003 Response: The Centre accepts this recommendation to foster the integration of CIP scientists' with work at the benchmark sites, as appropriate to their assessed needs. However,
Because we participate in CONDESAN as a member, and in the spirit of collaboration, the Centre will *recommend* to our partners that CONDESAN be used as a "mechanism for the development, evaluation, and dissemination of integrated technologies, and policy and management recommendations".

CIP's 2006 Updated Response: Fully implemented. CIP reminded the EPMR Panel that CONDESAN is an official CGIAR Ecoregional Program with its own Board; CIP has a seat on the Board and hosts the Coordination Unit of CONDESAN. As such, we could only recommend to the CONDESAN Board that partners use CONDESAN as a mechanism for development, evaluation and dissemination. CONDESAN benchmark sites are the basis for recent Consortium regional projects; these projects increasingly offer opportunities for collaboration with CIP. In 2005, CONDESAN is implementing activities with four of the six CIP Research Divisions and two of the Partnership Programs. Selected examples of on-going collaboration include: (a) comparison of conservation and traditional agricultural practices; (b) joint initiative to conserve biodiversity in the extremes of the Andes (see MTP Project 2 log frame) (c) a methodology on measuring poverty dynamics;(d) design of the Pro-poor Livestock Policy Initiative (PPLPI) with the Food and Agriculture Organization (FAO); (e) adaptation of the participatory Farmer Field Schools research methodology; (f) study on CONDESAN as a pilot case to analyze CIP's role as a Convening Centre of partnership programs with the backstopping of the Future Harvest Institutional Learning and Change (ILAC); (g) InfoAndina implementation of the e-consultation on the worldwide Mountain Partnership Action Plan, a responsibility undertaken by CIP.

Additionally, CIP's new Strategic Plan will result in focused learning sites where CIP staff will work together with partners to implement (and learn from) the new research and development paradigm. In Latin America, the first learning site has been identified as the Peru-Bolivia Altiplano.

Panel's Comments:
Reported activities were undertaken in 2005. There is no sufficient evidence of an integrated working process that feeds into either CIP or CONDESAN. In the last four months, since the new Coordinator of CONDESAN was appointed, there is a more intensive coordination to undertake joint activities with other Divisions. But the outputs are still to be seen.

Recommendation 5: Because of the extremely diverse activity profile of CONDESAN on one hand and its potentially important role in combining regional interests on the other hand, the Panel recommends that CIP

continue to have a strong scientific vision and methodological input in the consortium, in addition to CIP's current coordinating, administrative and facilitating role; and that the Technical Committee be revived and the coordinators of the cross-cutting themes be members of it.

CIP's 2003 Response: The Centre accepts this recommendation with enthusiasm and remains fully committed to continuing to provide strong scientific input to CONDESAN. Regarding the proposal to "revive" the Technical Committee and populate it with crosscutting theme coordinators, the suggestion will be communicated to CONDESAN leadership. (See our response to Recommendation 4 above for the rationale.)

CIP's 2006 Updated Response: Fully implemented. The Technical Committee has been revived under a new format. It is now composed of CIP and International Centre for Tropical Agriculture (CIAT) representatives and by the leaders of the so-called CONDESAN Initiatives (benchmark sites and regional projects). Dr. Peter Trutmann, Coordinator of the Global Mountain Program (GMP), is CIP's representative of the Technical Committee of CONDESAN. CIP scientists have been actively involved in the participatory exercise to build the Road Map of CONDESAN for the next five years. The Road Map emphasizes areas of innovation in agricultural systems and integrated management of water resources. In 2005, CIP created an Andean Coordinating Committee as a new standing committee of the Centre, where CONDESAN and other Centre representatives meet to facilitate joint action in Andean-based activities.

Panel's Comments:
CIP's input into CONDESAN Road Map was appropriate, but it did not pull CONDESAN's agenda close enough to CIP's mainstream research, to ensure that CONDESAN would contribute to CIP's research outputs.

Recommendation 6: Because of the need to consider CIP's priorities on a continual basis, given constant changes in the external environment, the Panel recommends that the Centre continue the interactions of its social scientists with its biological and physical scientists, but with a broader involvement of partners and constituency groups.

CIP's 2003 Response: The Centre accepts this recommendation and pledges to continue to promote interaction between our social, biological and physical scientists, as we have historically done. The Centre appreciates the EPMR panel's commendation of this program for its successful multi-disciplinary integration.

CIP's 2006 Updated Response: Fully implemented. CIP has a strong history of effective integration of the biological and social sciences, which has yielded strategically useful knowledge to biophysical researchers. This integration has kept the research agenda that is led by social scientists focused on problems relevant to their colleagues, thus the social sciences in CIP have never suffered from isolation or marginalization within the Centre. CIP Management is committed to maintaining that historical strength. The new Strategic Plan provides for full integration of social scientists in the research for development cycle. Within the new research program, MTP Projects 1 and 4 are lead by social scientists, with social scientists also housed in Project 6 and collaborating across all of the research projects. Two of our Partnership Programs are led by social scientists. Our new regional leader in SSA is an economist. In addition to engaging with their biological scientist colleagues in CIP, the social scientists at CIP have pioneered participatory approaches to research not only in focused agricultural technologies but also empowerment of rural communities and institutional arrangements that connect different market chain actors.

Panel's Comments:
Even though the effort is evident, and the comments of CIP valid at the time the 5th EPMR was presented, this effort has not been sustained. Also, as new issues are being addressed, the agenda for Social Science Research at CIP has widened and the human resources needed for this task have declined, putting at risk the quality and utility of these most needed outputs.

Recommendation 7: Because science and technology policy is increasingly important in a resource constrained world, and because the economic conditions of adopting new technology varies so much from one part of the world from another, the Panel recommends that CIP reallocate its social science resources to do more research on science and technology policy issues.

CIP's 2003 Response: The Centre accepts this recommendation. The Centre would like to defer, however, the reallocation of our social science resources until the completion of the EPMR's recommended visioning, strategic planning, and priority setting exercise. Also, given the fact that the primary CGIAR mandate for doing policy research rests with IFPRI, the Centre will seek a closer working partnership with IFPRI on science and technology policy issues.

CIP's 2006 Updated Response: Incremental implementation. Progress on this recommendation has been slow pending the completion of the 2005-2006 strategic planning exercise. With the completion of the Strategic Plan for Research, the Board of Trustees recognized that there is policy-relevant research being conducted across the Centre. In April 2006, the BoT recommend we conduct an internal exercise to document the policy-relevant information that is being generated for decision-makers.

Panel's Comments:
The lack of needed human resources and clear priorities has inhibited proper attention to this recommendation. This Panel has not seen evidence of the exercise recommended by the BoT.

Recommendation 8. Because of the potentially significant insights to be obtained from comparative studies of adoption and constraints, and because of the value attached to the results of such studies by the international donor community, the Panel recommends that CIP develop consistent frameworks for the collection and analysis of basic data on adoption and constraints (including household data), and strengthen the skills of the Centre in sophisticated statistical approaches required for the collection of such data.

CIP's 2003 Response: The Centre accepts the recommendation to strengthen the collection of data on adoption and constraints and will incorporate evaluation and definition of consistent frameworks as part of the EPMR recommended visioning, strategic planning, and priority setting exercise.

CIP's 2006 Updated Response: Incremental implementation. With respect to the framework for collection and analysis of data and statistical approaches, in late 2002 CIP created a Research Informatics Unit (RIU). RIU has developed a basic generic framework, tentatively called CIPEX, to manage and analyze data on field and laboratory experiments. The framework passed the prototype stage in March 2005 and is now (June 2005) in the pilot phase with selected users. We expect broader use by end of July 2005. The framework is web-based, thereby allowing easy sharing of data on both intranet and internet. This will also allow global analysis of data across localities. Components in the framework include a system for micro-management of projects and experiments and a statistical package with custom procedures to generate designs and automate analyses and reports wherever appropriate. The latter is intended to lessen the burden of repetitive tasks and promote best practices in statistical analysis. Additionally, the custom statistical procedures are also based on a freely available statistical package ("R", http://www.r-project.org) – thus promoting their re-use by

collaborators. CIP's statistician has conducted several training courses at CIP headquarters and abroad using this package and the custom procedures.

Specifically responding to the adoption and constraints of CIP's improved varieties, within the new Research Program the Research Division on Germplasm Enhancement and Crop Improvement has created an entire project on Germplasm Uptake and Utilization. This project includes an initiative to promote CIP materials more aggressively in targeted regions and production systems that are ripe for varietals change. In 2006, a post doctoral student with strong statistical skills was posted in Africa to begin adaptation constraint studies on CIP's orange-fleshed sweet potato varieties. CIP has also made a greater commitment to participatory plant breeding to incorporate users' criteria, thereby speeding up the process of varietals selection and enhancing the odds that suitable varieties will be forthcoming. CIP has had more success with smaller NARS having less potato-growing area than with larger, stronger NARS. Efforts to increase Centre presence in countries where potato-growing is more important, such as China, will help to redress these historical disparities in CIP-related varietals change.

Panel's Comments:
The Panel has not seen concrete evidence of progress on this recommendation.

Recommendation 9. Because of the opportunities for partnership are overwhelming and tend to lead the Centre in multiple directions, the Panel recommends that CIP formulates a strategy for how to engage in different types of partnerships, including the private sector.

CIP's 2003 Response: The Centre accepts this recommendation and will form a Centre Task Force to assess and gather data on our expertise and experience, and to address the specific issue of strategies for partnering.

CIP's 2006 Updated Response: From its inception, CIP has put a premium on partnerships. As a consequence, we have long-established practices and habits for engaging with partners. However, noting the dynamic external institutional environment in which CIP operates, the EPMR panel is correct in noting that the Centre should systematize the knowledge of past experience and maximize future effectiveness of partnering through a conscious policy for engagement. The re-structuring of the CIP Research Program resulted in one constellation of Partnership Programs, which include the CGIAR SWEPs that CIP hosts, as well as several other Partnership Programs specific to potatoes and sweet potatoes. This restructuring reflects our partnership strategy of creating an identifiable space for partners within the larger context of CIP. The new Strategic Plan establishes the strategy for engaging in different types of partnerships in different stages of the research for development cycle.

Panel's Comments:
Chapter IV of this EPMR report which addresses Crosscutting Issues, this theme is discussed extensively. Although some progress has been made regarding a higher visibility of CIP´s current partnerships in the new structure, and explicit consideration to them has been given in the Strategic Plan, further work needs to be done to develop the requested strategy, in particular regarding partnership exit strategies.

Recommendation 10. Because of the need to enhance CIP's scientific reputation and ability to compete more effectively for external funding, the Panel recommends that the institute encourage more frequent publications in refereed scientific journals and set more demanding annual publication performance targets.

CIP's 2003 Response: The Centre accepts this recommendation fully, as it is vital to our future. To address these needs several creative approaches are under consideration. These ideas go beyond the

points made in the EPMR's report, and include: the reorganization of the Center's information services; the definition of strategies that enhance and expand outlets for peer-reviewed research results of the types produced by IARCs and our partners; and better recognition for high quality research performance, including project-based support and scientist-based rewards.

CIP's 2006 Updated Response: Fully implemented. In 2003, the Office of the Director of Research implemented a new on-line reporting system for CIP Information Outputs, which specifically tracks 16 different types of publications, including peer-reviewed publications. As of 2005, the new individual work plans for CIP scientists explicitly include publication plans. In the 2004 and 2005 Performance Measurement Reports, CIP reported 1.16 and 1.17 peer-reviewed publications, respectively. That is, each IRS scientist is, on the average, publishing more than one peer-reviewed publication per year. Given CGIAR scientists are actively involved in capacity strengthening activities as well as research; we deem 1 peer-reviewed publication per year to be an appropriate performance target.

Panel's Comments:
The number of publications in refereed journals by CIP staff has increased substantially from only 15 in 2002 to 52 in 2006. But CIP has nearly 160 research staff including IRS and NRS. Further, in most of the research publications CIP staff was not the main author. For example, in 2006, out of 52 publications, CIP staff was the main author in only 13 publications. Many publications were in little known journals. Keeping in view the international status of CIP, at least 1 publication/research staff/year in a refereed journal of common knowledge should be aimed at by CIP.

Recommendation 11. Because traditional sources of funding for CIP's activities are drying up, and because additional outside funding is needed if the Centre is to attract quality professionals to contribute to its activities, the Panel recommends that CIP reallocate resources from its management staff to hire a competent international development officer, and use the leadership of that officer, together with a marketing survey, to develop a strategic plan for increasing its external funding.

CIP's 2003 Response: The Centre accepts this recommendation, but may implement it as a "development program" rather than a "development officer". The distinction here is merely one of greater flexibility as we may want to look at contracting for services (rather than hiring an officer), and we may want to partner with other Centres and the Future
Harvest Foundation on common resource-mobilization interests.

CIP's 2006 Updated Response: Fully implemented. Resource Mobilization at CIP has continued to grow, primarily through restricted grants. Since the last EMPR in 2002, funds approved in grants have totaled US$38.4 M. additionally, in response to this EPMR Recommendation, CIP hired a full time IRS as Chief of Resource Mobilization in 2004 and allocated two support staff positions to the Resource Mobilization Office. The Chief of Resource Mobilization took up her office in September 2004. She is prioritizing efforts to re-define the project development process, developing business plans together with project leaders and re-assigning responsibilities for fund-raising among Directors, project leaders and Regional Leaders. A preliminary strategic plan for increasing external funding was presented to and accepted by the Board at the April 2006 Annual meeting.

Panel's Comments:
This Panel agrees that this has been implemented, but is not necessarily working appropriately.

Recommendation 12. Because of the need to retain a healthy distance between the Centre and its External Auditor, the Panel recommends that the Board of Trustees change CIP's External Auditor at the conclusion of the current end-of-year audit/reporting cycle, and every 3-5 years thereafter.

CIP's 2003 Response: The Centre accepts this recommendation and it has been implemented.
Note: The temporary extension of the current external auditor was a result of the merger of the prior audit company (Coopers and Lybrand) with the newly contracted one (PriceWaterhouse) into a joint company (PriceWaterhouseCoopers). With the subsequent change-over of the Center's CFO position, the normal cycle of retaining an external auditor for limited periods has resumed.

CIP's 2006 Updated Response: Fully implemented. A new External Auditor, Deloitte and Touche, was contracted immediately in April 2002. In 2005, the Board's Internal Audit Committee recommended a change auditors; this was endorsed by the full Board at the March 2005 Board Annual meeting. Accordingly, at the April 2006 Board Annual meeting, BOD was appointed as the External Auditor for the 2006-2008 periods.

Panel's Comments:
The Panel was concerned about the adequacy of the review process used by the Audit Committee, as evidenced by its Minutes, in its most recent change of audit firm. The Panel advises the Committee to closely monitor the firm's performance.

Recommendation 13. Because of the need to give managers the ability to cost-efficiently conduct their business, the Panel recommends that the required changes to transform CIPFIS into a fully-fledged Management Information System be completed as soon as possible; and that managers at all levels then be given access to complete and transparent budgetary information on the activities they are accountable for, and that CIP management devise incentives to encourage and increase cost-consciousness and efficiency.

CIP's 2003 Response: The Centre accepts this recommendation and notes that the implementation of these enhancements were already planned before the EPMR and were undergoing implementation prior to the EPMR main phase. We anticipate completion of this project within a few months.

CIP's 2006 Updated Response: Incremental implementation. The CIPFIS enhancements to implement forward commitment for goods and services were advanced and fully implemented in November 2002, in order to provide more complete budgetary information for project leaders. In November 2005, the new Director General appointed an MIS Task Force. A 150-page Task Force report with recommendations was presented to the Board of Trustees at the April 2006 Annual Meeting. The Centre is now considering alternate recommendations to integrate all systems, including human resources management and to establish a fully-integrated Management Information System by 2007.

Panel's Comments:
This recommendation was also stressed by the subsequent CCER on Financial Controls and Reporting with which this 6th EPMR Panel is in agreement. Project managers report that they do not know their budgets and how much they have spent. The Centre still does not have an Enterprise Resource Planning system, including a Project Management Information System. As a result there are inefficiencies in the conduct of research and administration, and inconsistencies in the multiple databases which integration of CIP's existing standalone systems will not address.

Recommendation 14. Because of the importance of the Board's financial oversight role, and especially in view of the Center's funding situation, the Panel recommends that the Board ensure that it receives adequate financial and budgetary information from management and that it spend sufficient time exercising its budgetary and financial oversight function.

CIP's 2003 Response: The Board accepts this recommendation and has, in the past year, moved to elevate its attention to financial oversight. This will be accomplished through enhancements to the Center's management information system, and changes to the Center's annual auditing arrangements.

CIP's 2006 Updated Response: Fully implemented. As of 2002, the Internal Audit Committee stepped up oversight functions. The Board currently receives Quarterly Financial Reports from the Chief Financial Officer (CFO). Financial and budgetary matters are addressed at the Executive Committee meetings (in October and March each year) before the Annual Board meeting. A CCER on CIP Financial Management was called for by the Board at the March 2005 annual meeting. A Financial CCER was conducted in April 2005, with very positive findings. Beginning April 2006, the CIP Board will be meeting 4 times each year; the Board meetings have been scheduled to coincide with the Quarterly Financial Reports.

Panel's Comments:
The Panel agrees that the Board is receiving very full financial and budgetary information from management, but concurs with the 2005 CCER that the addition of a one page summary, responding to nine financial "dashboard" questions proposed in the CCER, would be an important addition, particularly for those Board members without financial accounting expertise. The Executive Committee of the CIP Board rejected this recommendation as being unnecessary; the Panel disagrees. The Panel notes that the Board has, at its most recent Board meeting, elected its first Board member who meets the CGIAR definition of "having professional qualifications in financial management".

Recommendation 15. Because of the Board's important role in programmatic/scientific oversight, the Panel recommends that the Board be more challenging and forward looking in its discussions of the Center's long-term scientific strategy.

CIP's 2003 Response: The Board accepts this recommendation and notes that it has been awaiting finalization of the change management activities of the CGIAR and the outcomes of
The regional planning efforts as necessary input to this process.

CIP's 2006 Updated Response: Fully implemented. The Board Program Chair co-chaired (with the DDG-Research) the entire process for the Visioning, Targeting and Research Realignment Exercises. The entire Board of Trustees was involved in the review and approval of the CIP Vision. The Program Committee is overseeing the Strategic Planning process. The BoT Program Committee also formed a sub-committee on Science and Technology Policy in 2004, in order to address critical longer-term issues related to scientific strategy (e.g. GMO research, Intellectual Property issues).

Panel's Comments:
The Board does a fine job of monitoring the Division Programs and Partnerships but is less effective in its use of the MTPs and CCERs to inform its thinking about the integration and overall strategy for the Centre. The Panel was surprised that the Board was unaware of the *Research Priority Assessment for the CIP 2005-2015 Strategic Plan,* available in draft form in 2006, and that neither the Board nor the Program Committee had discussed the document in their most recent meetings. The Board has not required the Centre to make the difficult decisions regarding specific strategic priorities in the Strategic Plan.

Recommendation 16. Because of the need to keep professional distance and independence of the Board vis-à-vis management, the Panel recommends that the DG not be a member of the Nominations Committee and that the DDG-F/A not be the secretary to the Board and its Executive Committee.

CIP's 2003 Response: The Board accepts the first point and has already completed implementation. As to the second point, the statutes founding the Centre prescribe the position of the Secretary of the Board.

CIP's 2006 Updated Response: Fully implemented. The CIP Board of Trustees accepted the first point of this Recommendation and removed the DG from the Nominations Committee in 2002. However, the Center's founding statues prescribe that the DDG-F/A serve as the Secretary to the Board. The role, responsibility and accountability of the Board Secretary have been defined. The Board has reviewed this recommendations and taken the view, along with many similar sized organizations, that the role of the Board Secretary can be undertaken without compromise by the Director of Finance and Administration. The Board continues to work actively to improve corporate governance.

Panel's Comments:
As a point of factual clarity, the Center's statutes do not prescribe the DDG-F/A to be the Board Secretary. Rather they state that the person be "a member of the Center's administration", a view with which this Panel has no problem.

Recommendation 17. Because of the value of a well-articulated, encompassing vision tied together with a strategic plan, the Panel recommends that CIP develop a vision and a strategic plan that will integrate crop improvement and protection, natural resource management, and the social sciences in an approach that will guide the understanding of problems developing countries face as they experience economic development.

CIP's 2003 Response: The Centre accepts this recommendation and plans to implement it through a yearlong process of visioning, stakeholder dialogue, strategic planning, and human
Resource capacity assessment, financial needs evaluations, and resource mobilization
Strategies.

CIP's 2006 Updated Response: Fully implemented. From 2002-2003 CIP conducted Visioning, Targeting and Research Realignment Exercises. The process and outcomes of these Exercises have been published and widely distributed (see *The CIP Vision: Preserving the Core, Stimulation Progress*, www.cipotato.org). As a result of these Exercises, the CIP Research Program was re-structured and this new Program became operational in 2004.

In 2005, CIP conducted a Centre-wide exercise on organizational change and strategic planning for research. The Strategic Plan for Research was presented to the BoT and was the sole topic of discussion and debate at the full-day Program Committee meeting in April 2006. The Strategic Plan has been approved by the Board and will shortly be posted on the CIP website for public comment.

Panel's Comments:
Chapter II deals extensively with CIP´s work regarding this recommendation by the previous EPMR. Regarding the Vision, the conclusion of the Panel is that it should be commended for the developing of the Targeting and the Pro-poor RandD Cycle. The consideration of the MDGs has been carried too far and as a consequence CIP´s new Vision has been expanded to include additional objectives for which the Centre does not have comparative advantages. Regarding the Strategic Plan, the opinion of the Panel is that it is an unfinished document and a recommendation has been made to finalize it.

Recommendation 18. Because of the need to give more attention to priority setting in CIP and to maximize the effectiveness of the resources made available to it, the Panel recommends that the vision statement and the

strategic plan be connected and used to establish a robust set of priorities to guide resource allocation in CIP in the coming years.

CIP's 2003 Response: The Centre accepts this recommendation, but notes our intentional postponement of priority setting activities in anticipation of the outcome of the change management exercises of the CGIAR (especially the emergence of the critically important Challenge Programs) and this pending EPMR.

CIP's 2006 Updated Response: Fully implemented. As stated under Recommendation 17, the Strategic Plan for Research is being completed. Out of this programmatic strategic planning will come a more complete Corporate Plan including an analysis of financial realignment for both human and economic allocations across the Research Divisions and target Regions. The priorities defined within programmatic strategic plans will also inform the evolution of business plans and inform a final strategic plan for resource mobilization that supports and drives achievement of CIP's Vision.

Panel's Comments:
In the opinion of the Panel, CIP has not produced so far a set of robust priorities to guide resource allocation in the coming years. This remains as an important piece of work to be completed. In Chapter II, the Panel provides some possible explanations for the delay of CIP in accomplishing such a task.

Annex 8
Analysis by and recommendations of the Panel of the 6th EPMR regarding the 2007 NRM CCER

Considering that recommendation 3 of the 5th EPMR states that:

"Because of the need for multidisciplinary approaches for sustainable improvement of the cropping systems under CIP's mandate commodities and limited resources for research, and the need to demonstrate impact, the Panel recommends that, within the overall strategic planning of the Centre, a priority setting exercise be conducted for NRM, using an appropriate methodology, to help focus the research agenda and develop a proper balance between process-oriented and application-oriented research, and between production systems based on CIP mandate crops on the one hand and livestock-pasture-based production systems on the other hand."
Considering also that the 5th EPMR Panel expected that such priority setting exercise:
"... Should also contribute to team building and developing a shared vision among the members of the team."
And noting further that in February 2007, CIP commissioned an external review of its Natural Resource Management Division in order to get a more informed opinion on the NRM research at CIP, and that at that time CIP's BoT recommended that the study "should address questions of critical mass, conceptual framework and linkages to CIP's commodity research."

The Panel analyzed the Terms of Reference of the CCER, and is of the opinion that they were designed to shed light on CIP's options and means of addressing recommendation # 3 of the Center's 5th EPMR. The Panel studied the report of the review, and has the following reactions to the recommendations of the review panel:

CCER's recommendations on CIP's NRM in February 2007

1. The quality of research of the NRM Research Division is outstanding and of world quality. This relates to remote sensing, modeling of crop growth, geospatial analysis, complex systems and landscape analysis. The publication record is excellent. We congratulate the Division on their achievements. The type of research being done is necessary to achieve the scientific objectives of the Division, as existing methodologies and software often do not function in the data-scarce environment where the work takes place.

   Response #1 to the CCER's recommendations by the Panel of the 6th EPMR (June 2007)
   The Panel agrees with the CCER in its assessment of both the quality of the research done and the publication record. However, the panel notes that the CCER did not relate the work of NRM to how it contributes to achieving the CG System Priorities. Nor did they link the NRM work to how it contributes to practical aspects of offering advice on how to enhance potato and sweet potato production and utilization systems. This would have helped in assessing the value of the work of NRM

2. Integration of different research results towards an operational and transparent procedure that helps to establish innovative land use systems that are sustainable and resilient, has not yet been achieved, nor is it clear what the "Road Map" is going to be, nor which "Toolkit" will be used. A Conceptual Framework is needed on the basis of which such a "Road Map" and "Toolkit" can be developed. Development of a Conceptual Framework has high priority. We provide some suggestions in the context of the Pro-Poor Research for Development Cycle, but the scientists within the Division will have to confront this challenge. A key element is thorough characterization of actual conditions of an area to be followed by scenario development. In addition we ask

attention for continued research involvement during implementation and for joint learning and evaluation in all phases of the work.

Response #2…. by the Panel of the 6th EPMR (June 2007)
The Panel fully agrees with this recommendation, that a 'Road Map', 'Tool Kit', and Conceptual Framework are required for CIP's NRM work to make progress. The Panel also agrees with the recommendation that advice on joint learning at all phases is an essential condition for the success of NRM at CIP. While the Panel acknowledges that this is already done to some extent, it considers that the efforts should be reinforced.

3. The MTP 2007-2009 lists as users of their work: CGIAR and NARS Scientists, Development Agencies, Policy Makers and Extension workers. The way research is currently presented is not suitable to address the last three categories of users as it is too much research oriented. Better ways of communication have to be explored and we advise that Mr. Paul Stapleton from the Communication and Public Awareness Department be structurally involved here in future.

Response #3…. by the Panel of the 6th EPMR (June 2007)
The Panel agrees that the way research is best presented will differ between the beneficiaries listed. The Project does present its work in mentoring workshops to carry the output to NARS, for example. However, it may take further work of the 'outreach'-type properly to inform the advisors of policy-makers. The advice to collaborate with the CPA Department on further work of the 'outreach'-type properly to inform the advisors of policy-makers is entirely appropriate.

4. The role of NRM within CGIAR is still not clear as evidenced by several publications that are discussed in our report. We suggest that the NRM Research Division within CIP takes the lead in using the conceptual framework to be developed (point 2 above) and a corresponding "Road-Map" and "Toolkit" to make clear which role NRM can play in establishing innovative land use systems that are sustainable and resilient. The Altiplano work and perhaps other studies are highly suitable to illustrate low cost/benefit ratio's of investment, high Internal Rates of Return and production of International Public Goods. Facts and figures are needed here, no conceptual or ideologically inspired proclamations. Due attention should be given to excellent recent papers on the subject by e.g. Barret, Harwood and the Science Council. We believe that CIP has a unique opportunity at this point in time to take the lead in NRM research within CGIAR and beyond. CIP is also in an excellent position to debunk the paralyzing perception that one is either engaged in research or in development. Of course, both elements are needed. The NRM Division of CIP shows that cutting edge research can be realized in a development context and that the development process is bound to benefit greatly.

Response #4…. by the Panel of the 6th EPMR (June 2007)
The panel fully agrees with this recommendation. Socio-economist, Agric-economists within the NRM team have helped to do estimates of benefits that are needed by stakeholders I the potato and sweet potato commodity chains. The rural poor need the guidance of what is profitable and sustainable and what is not, in either the short run or the long run. The "*complete picture analysis*" that NRM conducts is the most useful product for use by the rural poor. The Facts and figures needed here is to come from several relevant Divisions with which NRM has to liaise and work synergistically. Consequently, the road map and tools have to be developed in agreement with the other Divisions, at least in the areas where joint work has to be carried out. The panel does not agree with the aspect of the recommendation that the Research to Development Continuum does not have milestones. Up to a certain distance along the continuum, science work has to be

done by a group that cannot do the other parts. That is why there is need for relevant partnership to cover the rest of the journey along the science to development road. The map f the road should clearly define where each partner would stop and the other start. Other wise there would be an inefficient allotment of the tasks.

5. Considering the shift from core funding to project funding, the latter in direct interaction with donors, it is important for the Division to have a clear image of its identity, potentials and possibilities so as to guide selection of the most opportune actions in future and to rationally limit the range of activities. Our suggestion would be to frame such an image around a general theme for CIP as follows: "CIP FORMS AN INNOVATION NETWORK FOR POTATO AND SWEET-POTATO BASED PRODUCTION SYSTEMS"

   Response #5…. by the Panel of the 6th EPMR (June 2007)
   The Panel fully agrees with this recommendation. The suggestion to "rationally limit the range of activities" is a clear pointer to the need for conducting the priority setting that has yet to be done. The advice to form a "network" on the main crops is proof of the need to return to basics of emphasizing the work of NRM on the main commodities and how they are produced than to engage in issues that bear less relevance to them.

6. In fulfilling its MTP ambitions, the NRM Division needs input from the other Research Divisions and Research Support Units. In our report we mention different topics of possible cooperation with different Divisions, as raised in our discussions. At the same time, the NRM Division should provide support to the other five Research Divisions. Even though several efforts are made to improve interaction among Divisions, direct intervention by the DDG-Research, as in the case of the initiation of a drought resistance program between Divisions 3 and 5, appears to be the most effective.

   Response #6…. by the Panel of the 6th EPMR (June 2007)
   The panel agrees completely with this recommendation. It is noted also that the need for DDG-Research to intervene indicates some difficulties in creating joint collaborations between Divisions.—It may be necessary to examine why such difficulties exist

7. The work of the NRM Division would benefit from improved data management procedures within CIP. Minimum datasets for the various disciplines and streamlining and standardizing of procedures would allow easier exchange among divisions and easier operationalization of the: "Road Map" and "Toolkit" concepts. We realize that plans are being made to achieve this but we are not convinced that progress is rapid enough.

   Response #7…. by the Panel of the 6th EPMR (June 2007)
   Data generated by the several divisions will be of different types and to harmonize contents and formats will require that all the Divisions collaborate in defining meta-datasets. Until that has been achieved the Panel is doubtful of the practicality of this recommendation, and thus can only partly agree with it.

8. Advanced research efforts on GIS, Remote Sensing and geospatial analysis are in progress within the NRM Division. Comparable activities are performed within the Research Informatics Unit (RIU). The division of tasks is based on a research focus within NRM and a service focus within RIU. This works well, and NRM and RIU can remain separate units. We should realize, though, that research within NRM is fundamentally different from, e.g. research on such topics in a University Department or Fundamental Research Institute, that is primarily science driven. Basic research within NRM should, to the contrary, always be guided by needs arising from following the: "Road Map". Once the tools work well enough, further research is hard to defend in a CGIAR

context. ("The better is the enemy of the good"). Whether or not "Tools" need refinement by further research or new tools need to be added requires careful analysis because of the limited manpower within the Division.

Response #8…. by the Panel of the 6th EPMR (June 2007)
The Panel fully agrees with this recommendation. Without the "Road Map" is too easy to be diverted into improving tools that are already adequate for the job. The separation of the research and service functions is acceptable as long as it works well.

9. Development of innovative potato production systems requires systems to be sustainable. This has economic, social and environmental implications. The economic and social expertise within the NRM Division is now clearly inadequate. The plan to hire Dr. John Antle and have Dr. Corine Valdivia spends a sabbatical, to increase economic and social science expertise within NRM is strongly supported by the reviewers.

Response #9…. by the Panel of the 6th EPMR (June 2007)
To receive a visitor on sabbatical will incur little cost. Therefore we make no comment on that proposal. However, to recruit another member of staff without having first conducted the priority setting exercise and without the 'conceptual framework and direction' referred to by the CCER would be out of place in the opinion of the Panel.

10. An extra position for an Internationally Recruited Scientist is needed in the Division NRM in order to accomplish the objectives of the MTP. Even though the National Scientists within the Division perform very well, their efforts need strengthening to ensure future continuity of the work. We believe that a position for a Complex-Systems scientist would be most appropriate.

Response #10…. by the Panel of the 6th EPMR (June 2007)
The argument that the Panel has made against Recommendation #9 against further recruitment in the absence of the priority setting exercise applies here also. The Panel has considerable sympathy with CIP if it believes that its work in NRM would be advanced by some extra staff, but CIP cannot ignore that fundamental requirement of determining the boundaries and priorities of their work.

Annex 9
6th EPMR Panel Comments on CIP´S Proposal for the Creation of the CIP-China Centre for Asia and the Pacific (CCCAP)

Background

China has 4.7 million hectares of potato under cultivation and is the largest producer in the world. China produces 70% of the world's sweet potato.

Today, China is one of the largest users of CIP germplasm worldwide, and there is active collaboration with Chinese breeders in both crops in many regions. The China- CIP collaboration started almost thirty years ago when, in 1978 China launched its program for poverty reduction, along with a package of economic reforms to open the economy to speed up growth. At that time, when the country did not have access to western materials, CIP responded by sending a formal mission to China that same year. Collaboration began with germplasm exchange and capacity-strengthening work with Chinese scientists to develop a disease-resistant potato (CIP-24), which today is grown on approximately 70,000 ha, principally in China's drought-prone Northern provinces. "Cooperation 88", a high-yielding potato variety currently grown on more than 100,000 ha in Yunnan Province alone, is another example of successful collaboration.

In its collaboration with China, CIP emphasized the South-South sharing of nationally bred materials. An example of this research spillover was the variety ACHIRANA-INTA, bred by the Argentinean national potato program, identified as promising, tested for pathogens, and distributed by CIP in China and other countries (Madagascar, Bhutan). Interestingly, ACHIRANA-INTA never attained commercial importance in Argentina but, at one point a quarter million hectares of land were planted in China with this material.

Collaboration on sweet potatoes started twenty years ago, and was focused on developing new technologies to eliminate viral diseases in sweet potatoes. The techniques included new methods to identify viruses in sweet potato roots, and better systems for multiplying improved virus-free plant varieties. By the early 1990's, these efforts helped boost sweet potato production by over 30% and expanded cultivated area to over 600,000 ha in Shandong Province. Since 2000, CIP and Chinese scientists have collaborated through the organization of South East Asian regional courses on potato and sweet potato. CIP collaborates with the Root and Tuber Crop Research Institute of Yunnan Normal University and the Huize Agricultural Extension Centre

In 1985, CIP opened a liaison office in Beijing -- the first CGIAR Centre to take such initiative – and began joint work with the Chinese Academy of Agricultural Sciences (CAAS). China never forgot all the support that they got from CIP at difficult times for the Country. And in 1990, while Dr. D. Sawyer was CIP's DG, he received a degree as Honorary Professor of the CAAS. Through China's program to reduce poverty, the number op people living under the poverty line has declined from a quarter of a million in 1978 to just 10 % of that by the end of 04, meaning that China has already achieved the national MDG target oh halving the number of poor the 1990 figure of 85 million.

The 11th Five Year Plan for National Economy and Social Development, approved by the Chinese Government in 2006, explicitly includes the development of the potato sector as one of thee vehicles for economic growth and poverty reduction. The priority areas for further work in poverty reduction are the remote mountain regions, the ethnic minorities and some extremely poor pocket areas.

The China Centre for Asia and the Pacific (CCCAP)

Within this context, CIP and CAAS developed the idea of creating a regional Centre dedicated to potato and sweet potato research and development, the CCCAP. In the second half of 2006, the political framework for this initiative as approved in China by several bodies of the Government: the Ministry of Agriculture, the Ministry of Foreign Affairs, the Ministry of Finance, Customs, the Municipality of Beijing and the Chinese State Council. It is apparent that the relevant officials of all Ministries believe that this is a far-reaching project not only for China but also for Asia. Through this project the CCCAP is likely to become the first international program to be endowed with the legal International Organization status in China.

In March 2007, a formal delegation of CIP, including the Board Chair and the DG traveled to Beijing to begin work with CAAS, the Ministry of Agriculture and the Ministry of Foreign Affairs. In April 2007, a high level delegation of CAAS, headed by its Vice President, Dr. Liu Xu, and other members visited CIP installations in Lima with special interest in the Center's laboratories for virology, pathology, entomology, biotechnology and bio-safety, and in CIP's Biodiversity Complex. A new delegation of five CIP top scientists is expected to travel to Beijing at the beginning of August 2007, to continue the discussion about the objectives and strategies for the new Centre.

CIP has also signed agreements with Science Academies of different States in China, for example Sichuan and Guizhou, and has developed active work with both Academies.

Comments from the Panel

Although the details involved in the MOU that CIP is putting together with CAAS have not been revealed to the Panel, the Panel has no doubt that CIP has a creditable history of working with China, and that the CCCAP is an important asset for CIP. Indeed, given China's pre-eminence as a potato and sweet potato producer, and its longstanding relationship with the Centre, the Panel proposed a fieldtrip to visit China in order develop a better understanding of both, CIP´s work and the proposed CIP-CAAS Centre. But the visit was not carried out because CIP´s DG advised that such a trip was inconvenient at that time, due to the on going negotiations between CIP and CAAS.

However, the two members of this Panel that visited Vietnam and Indonesia, accompanied by CIP´s Regional Leader, asked the national authorities of those two countries their opinions about the "would–be-–international Centre in China". Although these authorities were basically in agreement with the idea of the CCCAP and CIP´s further work in China, they were concerned with the wider relevance of outputs from the Centre; their main preoccupation being that the CCCAP might end up doing relevant work only for China.
The Panel also notes that CAAS does not have a nationwide potato/sweet potato program, as The CCCAP will perhaps fill that gap, giving both crops much more visibility throughout China.

What each party, CAAS and CIP, is bringing to put CCCAP together is uncertain as well. Apparently, CAAS will provide an office location, the use of land for field trials, and research assistants, along with the international legal status for the Centre. The Panel's understanding is that CIP will have to provide up to 10 International Research staff to work in China. The source of funding for this substantial contribution by CIP (close to US$ 2M per year) is unclear to the Panel. The Panel believes that CIP's contribution to work in China should not draw on existing Centre resources.

Annex 10
CIP - CENTRO INTERNACIONAL DE LA PAPA: A RETROSPECTIVE VIEW

INTRODUCTION

With the intention of providing a retrospective dimension to its review, the EPMR '07 interviewed Dr. Richard L. Sawyer, CIP's founding Director General Emeritus.
Dr Sawyer retired from CIP in 1991 after a forty-year career concentrated on potato production.

CIP HISTORICAL HIGHLIGHTS

CIP's original 1971 mandate was to increase the yielding capability and efficiency of potato production in the countries where it was grown and to extend the potato's geographical range, including the lowland tropics. This mandate was later extended to include the sweet potato.

→ CIP's original mission was scientific, narrowly focused on realizing the potato's potential as a high quality source of human nutrition.

CIP's original Statutes laid out the Centre's approach to fulfill its mandate:

a) To conduct research programs for the improvement of potato production both nationally and internationally. (Other tuberous roots were added later.)
b) To collect, maintain and distribute germplasm, to be used nationally and internationally;
c) To provide assistance in the development of related institutions, in Peru or elsewhere;
d) To train potato technicians under the leadership of high-level scientists;
e) To publish and distribute research results obtained;
f) To establish/maintain an information centre, organize a specialized library and an herbarium;
g) To organize conferences, forums, round tables and seminars, nationally and internationally, concerning potato improvement activities;
h) To participate in all other activities related to the goals of the Centre.

At the outset, the Ford and Rockefeller Foundations provided a vital leadership and scientific view to the CGIAR. In 1973, nine CG donors funded CIP's US US$1.3M budget, which represented 100% of the Centre's funding and was wholly unrestricted. This budget structure continued until the mid-80's, when special projects—with restricted funding—started to appear.

CIP built its programs prior to building facilities to house the programs.

-Genetics being the scientific raw material for potato improvement, CIP first created a germplasm bank to systematically collect, classify, clean (eliminate disease) and maintain the germplasm ready for research.

-Programs were organized as 'thrusts' tackling key potato challenges, such as,

- Controlling fungal & bacterial pathogens, selected viruses, insect vectors & nematode pests;
- Developing varieties with a wider adaptation to environmental stresses and pests;
- Improving the potato's nutritional quality.

-Program structure featured outreach programs project contracts. CIP scientists, stationed regionally, collaborated with NARS and university programs/scientists to train personnel, adapt CIP technology, and to promote efficient local distribution and utilization of new potato varieties. An early example was the *late blight* project conducted in Mexico, because this country had the widest range of causal organisms.

-CIP early incorporated social scientists to assist programs in understanding regional issues affecting potato agriculture.

INTERVIEW WITH DR RICHARD L SAWYER

How has CIP's world changed since you founded it in 1971?

The Ford and Rockefeller Foundations inspired the creation of the CGIAR (CG) system to take on the four Centres they had started. The CG was set up to address developing countries' priority agriculture needs, as the problems were such that they could not address them.

Today, the situation is very different. As the system has grown and matured, many donors want to have an impact, to see visible changes produced by their funds. This has had a major effect on the Centres—on what is being done, how it is being done, and the staffing— as well as on the management of the CG system. The end-result is different than the original purpose of the Centres. Developing countries no longer take leadership in determining their priority research needs. The topics addressed today are mainly determined by a highly politically oriented CG membership deciding what they want to finance.

CIP's mission and character has been altered due to the greatly enlarged and simultaneously politicized system of donors; each donor now presses for his/her own interests and projects. CGIAR donors used to act collectively in support of the Centres, allowing research programs to be decided by Centre scientists; priorities were dictated by scientific considerations, feasibilities and opportunities. We worked to create genetic resistance to diseases and pests, to improve the potato's nutritional qualities, to develop local expertise and to strengthen the crop's delivery systems. Outreach scientists identified opportunities in terms of local collaborative capacity and conditions, including environmental, political and economic factors. Alleviating hunger and poverty was the great 'cause', but our mission was a scientific one; we were driven to improve potato production where it could be done to greatest effect, believing that this would naturally contribute to hunger and poverty reduction.

Initially, funding came from the two Foundations and a few governments that had capable scientists actively involved in the decisions being made. The decision-making process was a collective and cohesive endeavor. Today the CG and Centres' senior leadership appears to have gone missing as the donors have become involved in how "their" money should be spent.

With donors directly influencing research decisions —by funding this or that project according to their own interests— individual donors now control a decision-making process that used to be a scientific one. The CGIAR's original mission and collective character has been distorted. The system has become politicized, controlled by administrators without scientific expertise. Earlier, CG leadership stirred the membership to support the Centres with wholly 'unrestricted' core funding and 'restricted' funding did not exist. Centre Directors reported to the CGIAR membership on Centre activities and obtained their support; they derived their authority from solid, scientific credentials. Today, it appears that this leadership capacity is absent.

Today, no one wants to fund the core activities that feed the scientific research mill because their name won't be on the project. Thus financial considerations now control CIP priorities, research and activities. CIP's reliance on the new donor attitude has affected its autonomy. Today CIP's survival depends on responding to political pressures, not agro-scientific considerations. I really don't see how it can survive as a research institute if this continues. Setting research priorities is a scientific call. It requires a long-term vision and commitment because it takes about ten years to develop a new technology from start to finish. The politicization has affected both the quality of CIP leadership and its scientists.

Summarizing, I would say that CIP's world has changed in several ways. First, the CG system has lost sight of its original purpose, to lead donors to collectively support a common cause: to address the priorities of agriculture in developing countries. Secondly, CIP and the other Centres have lost their autonomy and therefore their integrity as scientific institutions. Dependent on funding, they must now adjust their research agendas to suit donors, who do not necessarily understand the scientific factors in the field. Thirdly, strong leadership, well versed in agricultural science, is no longer apparent.

Today, it's all about money, where it's coming from and where it's going to, and this is no way to serve the best interests of agriculture in developing countries. It was more cohesive world when the system got started.

How can the situation be set right?

The situation calls for managing change. The Global Village didn't exist thirty years ago and nobody yet talked about natural resource depletion. Today, we need a global food chain and Earth's natural resources are under survival stress. The CGIAR is still the best instrument to propel resolving the world's agricultural problems, and its Centres best equipped to provide the required agricultural technologies.

I would say that the first step is for the CG to recognize its untenable political trend. The system needs to restore cohesiveness to its course. The challenge is to reconfirm the original purpose of the Centres —to serve developing country priority agricultural research needs— and to return to a collective funding structure that cooperative political support can provide.

I believe that Centre autonomy must be restored. Addressing the problems facing agriculture in developing countries is the domain of the agricultural scientist. A corps of senior experts—well versed in the priority needs of developing countries—must take charge of identifying problems, setting priorities and providing insights to guide programs in addressing them. They must also have strong CG support to influence the donors to adequately fund such Centre-set priorities.

What the Centres are addressing as priority problems today need review and adjustment, if they are to service developing country priorities in agriculture. The two consequences of 'restricted funding' control over Centre priority setting are that, on the one hand, the Centres have lost their autonomy, and on the other, that developing countries —the target consumers of the would-be technology— are no longer squarely in the loop. Centres must reopen dialogue with the countries they serve to set their priorities in terms of their target constituency needs. This is the only way they can do the basic research required to solve developing countries' most pressing agricultural problems.

I would suggest that the CG depute an international panel of known research managers and scientists to analytically review the CGIAR system's evolution, shed light on its triumphs and failures, and provide the insights that might lead to reviving its very great potential.

Looking closely at the CG dynamics over time —its management and funding practices as well as Centre priorities, performance and achievements— would be a very constructive exercise, revealing whether the CG shift from science to politics really best serves everyone's interests.

TURNING TO CIP TODAY…

According to CIP, sweet potato research has almost as much potential as potato to alleviate poverty in developing countries. However, in recent years, CIP has increased the share of resources devoted to potato.

The objective being to maximize potential impact on the poor, what are the considerations in setting a proper potato vs. sweet potato funding balance?

The key consideration is climate, so the funding split would depend on what specific areas they are targeting. CIP research extended the potato climate range to hot climates. Sweet potato's climactic range is far more limited, though when I was still with Cornell, we were able to adapt it to Long Island and that's quite far north. But generally speaking, the potato is easier to acclimatize to hot areas than the sweet potato is to cold ones and that gives the potato greater potential. I'm not sure that the greater funding support to potato (75% vs. 60%) is a bad thing, because the potato has a much wider-ranging capability.

CIP's overall size is now about 70% of its 1990 size, when the Centre reached its peak size and focused entirely on potato and sweet potato improvement.
Should CIP continue to expand its core commodity research and continue non-commodity endeavors, such as Andean roots and tubers, urban and peri-urban agriculture, natural resource management, and agriculture and human health?

I believe that in a time of reduced funding, CIP should concentrate its efforts squarely on its mandate, which is potato and sweet potato, with minimal support to Andean roots and tubers, perhaps only to collect and maintain the germplasm for potential future work.
Potato and sweet potato have ample growth potential. Andean roots/tubers are suited to relatively small, mountainous areas, while potato/sweet potato can better address world food problems.

Latin America, especially the Andean countries, is now the target area for more than 40% of CIP's research, although, according to CIP's own assessment, this region accounts for only 4% of likely impact on poverty reduction. Major CIP opportunities to help alleviate extreme poverty seem to lie in Sub-Saharan Africa and Asia (western China and south Asia).
Should CIP reallocate its resources to maximize its potential impact in Africa and Asia?

CIP's mission is a scientific one. Improving potato production will help poverty reduction as better agriculture increases regional economic benefits and better potato crops deliver a high calorie/high protein food more economically.

CIP's greatest opportunities to improve potato agriculture do lie in Africa and Asia, however the choice of location for research activity should be based on practical agricultural considerations, not on administrative or political ones.

As to why CIP is spending 40% of its funds in Latin America, I would say that cutbacks probably cause it to focus more on where CIP is located and cut back on regional programs, though CIP should be concentrating on regional work because that's where the greatest growth is most likely, in areas of Africa and Asia, where the potential of the potato is the greatest. Yet those are the areas where they've cut back on in their spending…

Should CIP phase down its research on true potato seed?

No it shouldn't. CIP should keep it at the same level. As population increases, potato production becomes more important. Potato seed is important to expanding potato production because the one disadvantage of the potato is the large number of tubers needed to plant the crop, about a ton per acre. Earlier, seed was the way to store genetic material; now the Potato Seed Bank stores it *in vitro*.

However, developing a true potato seed able to produce same-quality potatoes —even though the genetic make-up might be different— would be a real scientific breakthrough.

> *CIP's own assessments indicate that pervasive institutional weaknesses in target regions severely constrain adoption of its technologies and the development of potato seed systems.*
> *Are CIP's partnerships and capacity-building efforts effectively tackling these constraints?*
> *Will CIP likely be able to delegate more of its locally focused activities to the NARS?*

Yes I agree that this can be the case, but this has always been the challenge.
Basically, the degree of the challenge is tied to a country's capacity to use CIP technologies, because you need local research for application, to adapt the product to local conditions. The major constraints are a country's political attitude regarding research to service its people—its understanding of the importance of agricultural research and its economic ability to support it. This varies from place to place and also as governments change.

Some countries (such as India, China or even Kenya) have excellent local capacity; other poorer ones (like Haiti, Bolivia, Guatemala and Ecuador) are another story. From the outset, CIP assisted and helped strengthen NARS research through regional training programs.

It's a case-by-case issue; it depends on a NARS' ability to grasp what a potato crop can do to improve the lives of its people. In the case of a positively inclined NARS, I would say that CIP should definitely be able to delegate more, building on past experience and the many CIP-trained local technicians. Over the years, CIP has trained technicians in more than 90 countries.

You have to start with the country needs, then see what product CIP can offer them and most importantly, train the national people to <u>accept</u> what you have to offer so that they will put it to use. Implanting the value is part of implanting the need.

> *Two years ago, CIP dropped its project-focused research structure and adopted one based on a set of core research divisions and partnership projects. Under the new structure, about 60% of the Centre's research resources are concentrated in four units (two divisions and two partnership projects), with the remaining resources divided among the other 10+ divisions, partnership projects and country projects.*
> *Is CIP's current organizational structure balanced and integrated?*

No, I would only call it balanced when there are no financial problems. Balance is lost when economic constraints dictate resource allocations. In a balanced and integrated organizational structure, scientific priorities dictate the structure. Without clear priorities, each person —donor, board member or staff— will apply the term to their own view of the priorities. I sense that CIP is now organized around money, not around priorities dictated by the Centre's mission.

Calling CIP's current organization structure balanced and integrated doesn't sound reasonable to me. It doesn't seem to reflect true priorities. It seems organized around where the money's coming from and where it's going to, not necessarily where the crop priorities are. Donors don't necessarily know the priorities.

I believe the countries and population figures must determine the priorities. It's not what the scientist wants to do; it's not what the donor is interested in. Centre priorities should be dictated by the greatest potential impact of what the Centre proposes to realize, which is potato production.

To set priorities, one must identify areas that best fit the following considerations:
a) Quantity/quality: Where can you produce the most potato of an acceptable quality?

(Including a realistic assessment of a collaborating NARS' capacity.)
b) Storage capacity: Can the area meet a minimum storage requirement of 10 months?
(Also evaluating a country's ability to provide such storage.)
c) Consumer acceptance: Will the local people accept/eat potato? (Flavor quality)

Richard L. Sawyer served in Europe during WW II returning to earn his PhD at Cornell University, where he became professor in vegetable crops. He then went to North Carolina State University as professor of horticulture and national potato-program leader in Peru. During this time, Dr Sawyer consulted internationally with the potato industry and was named president of the Potato Association of America. Dr Sawyer's work in Peru, the potato's centre of origin, led to his founding CIP in 1971 under the auspices of the Ford and Rockefeller Foundations.
In 1972, the Centre joined the CGIAR.
Dr. Sawyer served as CIP Director General from its founding until he retired in 1991.

After retirement, Dr. Sawyer was appointed president of Fundación Perú, chair of the IBSRAM board, member of the APUKI advisory panel, and became a consultant for ABSP at Michigan State University.

Dr. Sawyer's many honors include the Leonard H. Vaughn ASHS Award in 1957; Doctor of Science, University of Maine, 1976; Honorary Professor, Chinese Academy of Agricultural Sciences, Beijing, 1990; Life Achievement Award, Potato Association of America, 1990; Doctor Honoraris, Universidad Nacional Agraria La Molina, Lima, Peru, 1996.

Dr. Sawyer now resides in North Carolina with his wife, Norma.

Annex 11
CIP-Cost Allocation: Allocation of Projects Cost to CGIAR System Priorities, 2006-2009
(In US$ million)

Project	System Priorities	2006 (estimated)	2007 (proposal)	2008 (plan 1)	2009 (plan 2)
Project 1: Impact Enhancement					
	Priority 4D	0.018	0.026	0.031	0.038
	Priority 5A	0.404	0.483	0.543	0.613
	Priority 5B	1.365	1.575	1.736	1.929
	Priority 5C	0.115	0.165	0.202	0.244
	Priority 5D	0.119	0.172	0.210	0.253
	Priority 2A	0.030	0.043	0.052	0.063
	TOTAL BY PROJECT	2.051	2.463	2.775	3.140
Project 2: Genetic Resources Conservation and Characterization					
	Priority 1A	1.102	1.167	1.157	1.155
	Priority 1B	0.012	0.018	0.018	0.018
	TOTAL BY PROJECT	1.114	1.186	1.175	1.173
Project 3: Germplasm Enhancement and Crop Improvement					
	Priority 1A	0.505	0.394	0.407	0.374
	Priority 3B	0.008	0.006	0.006	0.005
	Priority 3C	0.008	0.006	0.006	0.005
	Priority 3D	0.008	0.006	0.006	0.005
	Priority 4A	0.008	0.006	0.006	0.005
	Priority 4B	0.008	0.006	0.006	0.005
	Priority 4C	0.008	0.006	0.006	0.005
	Priority 4D	0.026	0.018	0.019	0.016
	Priority 5A	0.008	0.006	0.006	0.005
	Priority 5B	0.020	0.014	0.015	0.012
	Priority 5C	0.008	0.006	0.006	0.005
	Priority 1B	0.270	0.211	0.218	0.201
	Priority 5D	1.290	1.003	1.038	0.951
	Priority 1C	0.008	0.006	0.006	0.005
	Priority 1D	0.008	0.006	0.006	0.005
	Priority 2A	1.389	1.076	1.115	1.020
	Priority 2B	1.359	1.056	1.093	1.001
	Priority 2C	1.359	1.056	1.093	1.001
	Priority 2D	1.069	0.806	0.842	0.760
	Priority 3A	0.008	0.006	0.006	0.005
	TOTAL BY PROJECT	7.379	5.695	5.905	5.393
Project 4: Integrated Crop Management					
	Priority 1A	0.024	0.026	0.027	0.027
	Priority 4D	0.894	1.442	1.731	1.779
	Priority 5A	0.210	0.379	0.469	0.484
	Priority 5B	0.115	0.212	0.263	0.271
	Priority 5C	0.146	0.262	0.324	0.334
	Priority 5D	1.237	1.781	2.067	2.113
	Priority 2A	0.981	1.118	1.187	1.196
	Priority 3A	1.054	1.408	1.594	1.623
	TOTAL BY	4.662	6.627	7.661	7.827

	PROJECT				
Project 5: Natural Resources Management					
	Priority 4A	0.422	0.421	0.395	0.440
	Priority 4B	0.030	0.031	0.029	0.032
	Priority 4D	0.810	0.799	0.750	0.824
	Priority 5B	0.151	0.153	0.143	0.161
	Priority 5C	0.301	0.305	0.285	0.322
	Priority 5D	0.301	0.305	0.285	0.322
	Priority 2A	0.100	0.094	0.089	0.092
	Priority 2B	0.188	0.179	0.170	0.179
	Priority 3A	0.137	0.131	0.124	0.133
	TOTAL BY PROJECT	2.439	2.418	2.269	2.506
Project 6: Agriculture and Human Health					
	Priority 4D	0.027	0.051	0.049	0.110
	Priority 5C	0.160	0.309	0.292	0.663
	Priority 5D	0.080	0.154	0.146	0.331
	TOTAL BY PROJECT	0.267	0.515	0.487	1.105
Project 7: Consortium for the Sustainable Development of the Andean Ecoregion - CONDESAN					
	Priority 4A	1.275	1.132	1.031	1.053
	Priority 4C	0.212	0.189	0.172	0.176
	Priority 5A	0.106	0.094	0.086	0.088
	Priority 5C	0.319	0.283	0.258	0.263
	Priority 5D	0.212	0.189	0.172	0.176
	TOTAL BY PROJECT	2.125	1.887	1.718	1.756
Project 8: Global Mountain Program					
	Priority 4A	0.227	0.149	0.060	0.061
	Priority 5B	0.052	0.034	0.014	0.014
	Priority 5C	0.157	0.103	0.042	0.042
	Priority 5D	0.157	0.103	0.042	0.042
	TOTAL BY PROJECT	0.592	0.390	0.158	0.159
Project 9: Urban Harvest					
	Priority 3B	0.046	0.032	0.032	0.013
	Priority 4C	0.157	0.109	0.111	0.043
	Priority 5A	0.994	0.811	0.826	0.585
	Priority 5B	0.023	0.016	0.016	0.006
	Priority 3A	0.113	0.078	0.079	0.031
	TOTAL BY PROJECT	1.333	1.046	1.066	0.678
	TOTAL BY CENTRE	21.962	22.225	23.214	23.738

Annex 12
SWEPS

Project 7 CONDESAN

Introduction
Although the Panel was not requested to evaluate Ecoregional programs, it considered important to do a basic appraisal in order to be able to better assess CONDESAN's relationship with CIP´s, given that CONDESAN is reported as on of CIP's MTP projects. Furthermore, the 2002 EPMR had made important recommendations to CONDESAN.

In 1993 the CGIAR Science Council incorporated CONDESAN as Ecoregional program of the System. Between 1993 and 1997, CONDESAN was in fact the CIP's NRM Program. In 1998, Project 14 incorporated part of the NRM work, while other projects remained at CONDESAN. A 1999 CCER confirmed the need to keep CONDESAN as a separate Unit in CIP.

CONDESAN has its own Board of Trustees, where CIP and CIAT have a seat. CIP hosts the Coordination Unit (CU) of CONDESAN, which reports to the CIP DDG-Research. CONDESAN has an Advisory Committee (formally called "Technical Committee") composed by all CONDESAN regional project leaders, plus a CIP and a CIAT representative.

Current Strategy and Overview
Six topics integrate the CONDESAN research agenda: Soil and Water Management; Agro biodiversity in Andean Roots and Tubers; Improved Farming Systems for the Andes; Policy Research; Capacity building; and Enhancing communications through InfoAndina. CONDESAN's projects are operated by local partners. Each project is financed by a different donor. For example: GEF finances "Conservation of the biodiversity of the Paramo in the northern and central Andes – "Paramo Project"; GTZ finances "Sustainable land use in Andean river basins (*Cuencas Andinas*)"; The Water & Food Challenge Program finances "Andean System of Basins"; IDRC finances "Andean Vision of Water in the Andes" and "Social Vision of Water in the Andes" and Pro-poor Livestock Policy Initiative – FAO; Water Rights in Bolivia; and SDC finances "InfoAndina".

CONDESAN aims to become a regional reference and a multi-stakeholder dialogue platform for issues related to the sustainable development of the Andean Ecoregion. In 2005 CONDESAN revised its strategy through its "Road Map" and defined two thematic areas of work through 2010: (a) the integrated management of water resources and (b) the development of innovation in agricultural systems that value the Andean diversity.

In order to encourage and facilitate the relation with its other projects in the Andean Region, CIP created the Andean Coordinating Committee. The members are CONDESAN, Papa Andina, and CIP's NRM, ICM and IE Divisions. Supposedly with the aim to better integrate CONDESAN with CIP´s main stream research, the Coordinating Unit of CONDESAN claims that it is preparing a proposal for a new project, which, according to the CU, is expected to build a strong cooperation with other divisions, within the scope of innovation systems.

Resources
CONDESAN has one IRS and nine NRS working in CIP HQ, CIP Quito and CIAT Cali offices. Two additional regionally recruited staff has been appointed and will start working soon (one based in CIP Quito and the other in Bogotá). The staff include: an information scientist, a sociologist, a system engineer, a water resources engineer, a hydrologist, an ecologist, and several biologists. New positions

are being planned to bring senior advice on education and policy dialogue. A new Director of CONDESAN was recently appointed, after the position remained vacant for nearly a year.

The financing of CONDESAN projects is assured through two 2007 projects and through two 2009 projects. The CU is financed by the World Bank, channeled through CIP, at least through 2007. According to the 2008-2010 MTP, funding for 2006 was US$1.753M.

Achievements

According to CONDESAN, its achievements include the generation and extension of knowledge, information, methodologies, policy recommendations, and capacity strengthening of partner organizations. More specifically, CONDESAN reports that:

Methods were generated for: Comprehensive watershed management; watershed analysis and territorial planning; assess the environmental externalities based on Hydrological Response Units (HRU) to be provided by different areas within a watershed; a methodology to obtain rainfall data in areas where no stations are available, and review of concepts and methodologies for Ecoregional analysis.

Knowledge was generated and extended for a renewed strategy on the valuation of natural resources, including: The financial value of environmental services offered by the Andean ecosystems was estimated; mechanisms for payment for environmental services have been developed. They contributed for the Fuquene (Colombia) and Alto Mayo (Peru) watersheds to start implementing PES mechanisms; and application of territorial planning, conservation agriculture and innovative co-investment schemes are all active part of the project in different basins.

Policy proposals based on CONDESAN outputs include: The Pro-poor Livestock Policy Initiative project contributed to the formulation of CONACS (Peruvian Camelids National Commission) long-term strategy; the Water Regulation project in Bolivia resulted in new legislation that officially recognizes water rights of traditional indigenous communities; the Andean Environmental Agenda adopted by Andean Community build from contributions of projects: Paramo and Andes-CPWF. Also, High Paramo and Puna grasslands are protected based on policies informed by CONDESAN research, which included diagnosis of nine paramo pilot sites completed and preliminary versions of management plans ready; a training strategy and a policy strategy designed. The Andean Community of Nations (CAN) was identified as regional partner of valuable potential support in policy issues and it was invited in the Steering Committee of the project.

Regarding **information**, InfoAndina was established as a means to reach a large community of scientists, extensionists and potential contributors to policy definitions. In May 2007 CONDESAN received 46,850 unique visitors.

Project 8 Global Mountain Program (GMP)

Introduction

The Global Mountain Program is a System Wide Eco-regional Program (SWEP) that promotes CGIAR action in support of Agenda 21 (Chapters 13 and 14 on Sustainable Mountain Development). CIP acts as the convening Centre (CG mandate on mountains).

Some 720 million people [about 10% of human population] live on mountains, possessing much know-how for surviving in mountain ecologies. These people are largely indigenous to their areas, diverse in culture; suffer out-migration, and suffer deterioration of their fragile environments

resulting in their being marginalized in development. This trend goes on unabated. CIP reports the GMP as one of its Partnership Programs, and as Project 8 in the MTP.

The GMP has been operative in CIP since 1997. In the past ten years, the work has developed in three phases within CIP as described below:

- **In the previous constrained-project approach, this SWEP was within the Integrated NRM in Mountain Agroecosystems Project, as one of its six subprojects.** The GMP was an umbrella organization that brought together ICIMOD, CIP (CONDESAN) and ICRAF's (AHI) mountain efforts in three continents and was funded by SDC & IDRC.
- **In 1999, GMP moved to the NRM Program and became an integral part of the then vision and activities of the NRM program**. The 2002 EPMR did not evaluate the GMP separately because the GMP was the NRM Program. The GMP contributed to the NRM Program with SDC funding. **N 2004, CIP's reorganization enabled GMP's identity as one of its Partnership Program.** The program was reoriented in 2005 to support MDGs and CG System Priorities in Mountains. The principal funding institution is CIDA.

Current Strategies and Overview

The current strategy has components relating to: a mission statement, strategy and main objectives. GMP's mission includes the following components: bring together the CGIAR to support sustainable mountain development – it acts as an umbrella organization; establish mechanisms that enable knowledge exchange on mountain issues within and between continents; promote research to support sustainable development efforts on overriding global issues that affect mountain regions (thematic action areas); link research with development; and engage in international dialogue and advocacy of mountain issues through the establishment of international mountain platforms.

The chief strategy is to search for information and models that planners and policy makers can use to enhance the sustainable management of mountain systems; to work with the Mountain Forum to develop an agenda and program to develop an 'innovation marketplace' for mountain dwellers and stakeholders; contribute to content by bringing together and analyzing the CGIAR's 'technology offer' for mountains; and study access issues: Study with mountain communities their information sources and bottlenecks.

Resources

Project human resources comprise one full-time IRS scientist and 2 NRS as shown below. The funding available to the project is small and declined significantly after 2005, as shown below:

	Years, US$ million			
Donor	**2004**	**2005**	**2006**	**2007 estimate**
CIDA	0.393	0.315	0.398	0.356
Spain INIA	1.085	1.080	0	0
SARD-M/FAO	0	0	0.072	0.060
Total	1.478	1.395	0.470	0.416

Source: GMP

The staff strength is low for the planned activities and outputs planned. According to the 2008-2010 MTP, regional allocations of the GMP's funds in 2006 were as follows: with 68% in SSA' 18% in LAC, and 7% each in Asia and CWANA. Since most of the funding for this project is restricted, this has also led to a similar fluctuation in its work activities.

Main Achievements

The GMP, lists the following as main achievements in each of the program's two phases:

Phase 1 1997-2003:

- Tools and methods developed to support NRM in mountains: Ecosystem and watershed analysis and comparisons of mountain regions. Decision-making and support tools (e.g. Comparison between Andes, HKH, and Africa). Various CD-ROMs are available that summarize the work. (CIP-NRM Program) - Reported by NRM Division;
- Stand-alone training conducted to expose many technicians on how to do modeling and such quantitative and acquire requisite computing skills for the work that they need to do.
- Approaches developed to linking mountain farmers to markets with value added livelihood technology options: Puno, Peru (The alliance of partners was awarded various prizes for these activities). (CIP-NRM Program and National partners) - Reported by NRM Division.

Phase 2 2004-2005:

- Advocacy: Organization of the Cuzco meeting of the International Mountain Partnership. CIP, MP, Government of Peru;
- Support for CIP's Seed systems research in Africa. CIP- Division 3 (&4) Reported by Division 4.Report on genetic erosion of staple crops in Uganda. AHI, IPGRI, Makerere University Report on the effectiveness of NRM Policy studies in East African Highlands. AHI, ICRAF, University of Nairobi.

Phase 3 2006-2007:

- Reorientation of the GMP.
- National RUL platform, research agenda and government & donor support established in Ethiopia.
- Reports and recommendations available on strengths and weaknesses of mountain policies available for the Andes.
- Reactivated the Mountain Forum in Africa, and collected of CGIAR products for mountains.
- GMP an important player in the global mountain agenda: (Member of the Adelboden Bureau, Board of Mountain Forum; Active Member of the SARD-M initiative of the Mountain Partnership).
- A research support group set up in Ethiopia –(CIFOR, CIP, SWIUPA, AHI, IFPRI, IWMI, ILRI, EIAR, UA)

The Panel has examined the future plans (2007-2008 year) of the project and comments as follows:
1. Regarding "Secure funding to mobilize research from the alliance in defined rural-urban linkages research topics & secure coordination funds", the Panel does not see this as a research activity.
2. Regarding increasing "the global benchmark sites for RULs" and plans to "Coordinate activities more with SWIUPA", the panel views this as an open-ended activity with no numbers for a target or measuring or monitoring its achievement.

3. Regarding plans to "Eliminate the policy theme on its own and use it as a crosscutting theme", the panel considers that this activity in 2 above seems in need of clarification, as it is contradictory to *eliminate* and to *use.* If even a movement to cross-cutting issues is intended, there are still no specifics as to which it should go.

4. Regarding plans to "Develop the 4th thematic action area on Vulnerability and Climate change in mountains"; the Panel is not sure of what is intended as the substance from the development of the theme on climate change? Is it climate change in mountain areas standing alone from the whole landscape including non-mountain areas? Can this be localized to mountains or would it be the influence of climate change on mountain peoples and areas alone?

5. Regarding plans to "Work with CONDESAN-InfoAndina to push the mountain agenda on information for mountain people [GMP/MF Workshop at ICIMOD in June]" the Panel is not sure of what is expected here. Is it to look at how usable information would be disseminated through InfoAndina to reach the mountain people? A clearer view is surely needed of the research or institutional framework to be built

6. Regarding plans that "AHI will be integrated in to ASARECA in East Africa. Need for new strategies and partners in Africa", the Panel is not sure how CIP will be involved in this. There is also no plan or direction for the new strategies and partners to be desired.

7. Regarding plans that "The Mountain Partnership secretariat will be decentralized. GMP, CONDESAN and CIP are likely to play more important roles in the Mountain Agenda", this statement, in the understanding of the Panel, indicates no research activity. In all, it is clear that GMP has little significant contributions to make from its present framework and operations to add to CIP's research agenda for meeting the outputs in any of the CGIAR System Priorities. And its case is made more difficult by the small strength of staff now on the ground. Any likelihood of funding of its present work plans would do little to fit into the MDGs as they now stand. It is clear that there is a strong relationship between the work of the current project and those of NRM and CONDESAN, even as one reads its history. The Panel is of the view that the one IRS of GMP can be absorbed in NRM to strengthen the systems work there.

The Panel believes that the furtherance of many GMP partnerships without clear plans of concrete activities would not add value to the core research outputs of CIP. It is clear that even the future plans also indicate a lack of clarity in focus towards the meeting the needs of poor potato and sweet potato farmers in mountains within the targeted areas of CIP. The programs show no recognition of the current funding constraints particularly so as the partners are several and have no clear plan to follow in demonstrating the three way plan of RUL, information and policy. The Panel is, therefore, unsure if the Project assumes the less than US$0.5M level will change drastically and favorably. This optimism for more funding levels is but one planning scenario. The other planning scenario could be that the funding level may remains as is. If so what could GMP do is an issue the Project has as yet to consider.

On the publications of the Division, only the GMP annual report for 2005 and 2006 were presented before the writing of this report. On examining these, it is clear that the emphasis on policy has had occupied the thought and work of the Project. As described in one of the annual reports, it is difficult to make progress from the many partners in policy of mountain locations that also experience other difficulties that CIP does not address.

Project 9 Urban Harvest

Introduction

This project began in 1999 with a US$ 500,000 contribution from the CGIAR and known originally as the Strategic Initiative on Urban and Peri-Urban Agriculture (SIUPA), CIP is the Convening Centre of this CGIAR System-wide Program born as a recommendation by the third and last system review of the CG System in 1998. At the time this review was carried on, there were a lot of expectations from different organizations that pushed for the CGIAR involvement in a variety of social and non-agricultural themes. SIUPA was launched as a consortium (currently around 40 partners) for applied research and development on a broad subject: "to improve the security of the food supply and the income of poor populations living in the outskirts of large cities or in peri-urban areas". The theme was obviously beyond CIP expertise, but as others at that time this had raised expectations of fresh financial contributions from new donors/investors.

Despite the trend that the developing world is becoming increasingly urban and that for the case of Latin America most of the poor is thought to live in urban areas, "rural is larger than what official statistics say", according the World Bank (Beyond the City, the Rural Contribution to Development, 2005). For LAC as a whole the most striking finding of WB research was that, using "consistent criteria" (population density and distance to cities with population over 100,000 people) the rural

population is around 42% of the total, whereas the official statistics yield an estimate of about 24%. With this figure perhaps it is no longer the case that in LAC the majority of the poor lives in urban areas. The associated problem to be considered is that of the disparities in the per-capita spending levels in urban and rural areas. Public expenditures on social services and infrastructure are biased against rural areas and this has serious consequences on the productivity of human capital. One important lesson perhaps, is that of harnessing the economies of scale provided by urban agglomerations and the links to global markets that can enhance the productivity of the rural economic activities and simultaneously slowing rural-urban migration.

Research on urban and peri-urban agriculture was not considered as a System Priority for CGIAR research, according to respective document of 2005. Thus, so far, the Science Council has not recognized the Urban Harvest System wide program as part of the SPs and the continuation of the program is considered to be a part of the 20% of the System's resources spent on off-agenda research. In the MTP 2008-2010, the Urban Harvest project is reported allocating its whole budget to "new research areas", while in the MTP 2007-2009 this project was basically linked to SP 5A.

Current Strategy and overview

SIUPA has three major objectives in relation to urban and per-urban agriculture (UPA): (i) Reduce poverty and increase food and nutrition security of UPA population through local agricultural production, processing and marketing, (ii) Enhance the positive potential of UPA for urban ecosystem maintenance whilst reducing negative environmental and health impacts, (iii) Establish the conditions for the institutional and policy recognition of UPA as a productive and essential component of sustainable cities. In this respect it is working on four areas: production, marketing and utilization of perishables; agriculture and urban livelihood; health and environmental impacts of urban agriculture; and agricultural and non-agricultural use of urban resources. The Figure below shows the program strategy. The Urban Harvest program is expected to impact in the four spheres of the Figure.

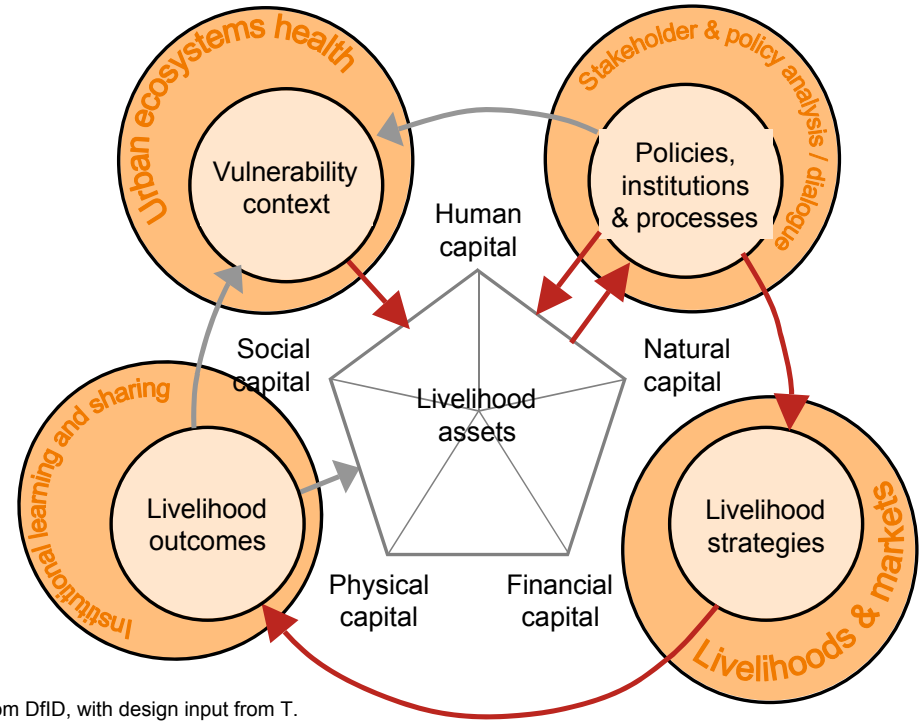
Resources

With available resources, activities of the project are implemented through regional networks in "anchor sites" where diagnostic studies, technical interventions and policy analysis and development take place. Through several mechanisms "contact cities" are linked to the main activities of the project. The estimated 2006 budget for this project was of US$ 1.33M, while according to the 2008-2010 MTP, the actual expenditure for that year was US$ 0.98M.

Main Achievements

Urban Harvest's research and development agenda is organized around three substantive R&D themes: Stakeholder platforms and policy dialogue, which seeks understanding of the actors, policies and institutions concerned in urban agriculture and develops methods for communication and consensus among actors and integration of urban agriculture in urban management. Urban Livelihoods and Markets targets production, processing, marketing and consumption systems along the rural-urban transect and identify technology interventions to enhance income and food and nutrition security. Urban Ecosystem Health focuses research and development on feedback systems through which urban agriculture impacts on individual, community and environmental health. A fourth area involves knowledge networking and capacity development at global and regional level (see Figure).

Adapted livelihoods framework*



* From DfID, with design input from T. Zschocke

The flag publications provided by UH are basically surveys and studies analyzing agricultural production patterns of poor households in urban and peri-urban areas. The general conclusion being that urban agriculture has an important role in improving food security on the one hand, and that many technological, policy and institutional constraints are reducing its potential on the other. Urban adapted Farmer Field Schools to a wider set of issues than IPM including crop management, soils, markets and local learning and organization are being proposed to improve the productivity of urban and peri-urban agriculture.

Annex 13
CIP's "Report about Training" presented to the Panel by Thomas Zschocke, Head of CIP's Capacity Strengthening Unit

Implementing recommendations of the 5th EPMR
CIP continues to integrate training activities fully with its research program. It continues to propose, support and host research opportunities for postgraduate training. In correspondence with the recommendations of the System Priorities for CGIAR Research1 CIP enhances the (human) capacity of its partners in developing countries through program-associated capacity strengthening, that is, as integral part of the priority research, and through involving appropriate partnerships to enhance innovation and learning. CIP emphasizes human capacity development to accompany the innovation systems approach that governs the research program of the Impact Enhancement Division to produce knowledge more efficiently and use it more effectively.

Since the 5th EPMR, however, the funding situation for training has changed. CIP will no longer provide routine, standalone professional training because of the reduced availability of unrestricted funds. Rather CIP will provide specialized training through restricted-funded research projects to assure that CIP's intermediate research outputs are taken up by their intended users. As a result the Head of the Department is now asked to engage more actively with CIP research projects and partnership programs to co-write project proposal that contain a major capacity building component. This contributes to implementing the recommendations of the 5th EPMR to strengthen the interaction of social scientists with CIP's biological and physical scientists, but also with partners and other stakeholders. For instance, proposals submitted together with the Papa Andina Initiative have been funded by DfID and NZAID respectively. The DfID-funded PMCA project in Uganda has been successfully implemented with the active participation of the Head of the Training Department resulting in a follow-up grant by ASARECA to complete the PMCA cycle.

Instead of the previous three-year rolling plan training activities are planned and incorporated into research projects as part of CIP's medium-term plan (MTP). Since 2007 capacity building activities can now be reported more explicitly as part of the Project Narrative of the MTP, while free-standing training can be summarized in the Overview section (see the current 2008-10 MTP guidelines). Capacity building activities associated with the Science Priorities are now identified in the context of the impact pathway and defined as part of the Science Priority and shown in the in the respective outputs and output targets. CIP has achieved this through reporting requirements of the Impact Enhancement Division (see below).

Changes in the organization
Since the 5th EPMR the organization of the Training Department has changed. Now the unit consists of a head of the department, an office manager, a distance learning technologist and a graphic designer, the latter replacing the former training assistant. The events coordinator and the audiovisual technician have been reassigned to the Visitor's Office which handles events and conferences at CIP since the beginning of 2007.

Objectives & Strategy
CIP's objective for human capacity building is expressed in its new strategic plan for research, which replaces CIP's training vision / strategy from 1999. CIP will provide and investigate research-based approaches to demand-driven training. CIP will focus on processes in adult learning, knowledge structures and competencies, instructional systems development, organization of learning within the institutions and policies for regional cooperation and learning networks. The strategy is that CIP will implement a research program to convert our catalogue of training materials into formats that can be

utilized with modern ICT and accessed either remotely for interactive self-directed study or by training professionals that can quickly assemble material specifically tailored for varied interests and levels of education. As part of this research CIP will enhance adult education with a learning content-management strategy to produce and share training and learning materials consisting of semantically enriched learning objects using the single-source publishing approach.

Research focus
In order to more strategically invest the unrestricted core funds CIP decided to reassign these funds into a research program that is housed in the Impact Enhancement Division. The research program on capacity building / training will contribute to the enhancement of human capacities of partner organizations to increase their overall ability to conduct scientific research (research capacity), manage technical change (technological capacity) and innovate in dynamic environments (innovation capacity). Based on the systems model of performance improvement this research project will study structured approaches to needs-based training that increase the motivation of individuals and teams to improve their performance and strengthen the organizational environment to facilitate the transfer of learning. This research contributes to System Priority 5A, specific goal 5 that were designed to enhance the structure, conduct and performance of knowledge-intensive institutions. The strategic focus on a single source content management approach using ICT/KM as part of this research program is intended to assist scientists to become more sophisticated in assembling their training materials on a needs basis and to use their time more efficiently.

Training services
The Training Department continues to provide services to host student interns and individual trainees organize training events and develop training materials. Since 2004 the Training Department maintains a multimedia training lab for computer training. It is equipped with desktop computers, multimedia workstations, a video conferencing system, scanner, digital video camera, among others. The training lab is fully networked and is in the process of being upgraded in order to allow for video conferencing using Internet connectivity. To continue the efforts in distance learning the Department now maintains an open source learning management system, called Moodle.

Collaboration with the CGIAR
The Head of the Department is an active member of the community of CGIAR training officers. In this function he was the co-coordinator of the Online Learning Resources (OLR) project that was funded by the CGIAR ICT-KM Program. This project has produced a system-wide on-line repository of training materials and a Web-based course system which are accessible to the public. The project has produced an application profile for the semantically enriched description of CGIAR training materials based on the international learning object metadata (LOM) standard IEEE 1484.12.1-2002. In April 2007 the OLR project secured funding for a second phase; CIP is hosting and coordinating the project. The goal is to establish system-wide quality assurance standards for training. This project contributes to achieving a recommendation of the Science Council Training Study to implement quality assurance protocols for planning, managing and evaluating formal and informal training. Finally, the Head of the Department was an active member of the task force of IFPRI's Global Open Food and Agriculture University.

CGIAR training study
In 2006 the Science Council published its report about the "Evaluation and Impact of Training in the CGIAR.9 This training study assessed the training provisions of the CGIAR in the past decade. The findings of the report state that the quality and effectiveness of training has been generally high, but the increase in project funding and the reduction in unrestricted funds available has lowered the yield on the investment in training and learning and a weakening of training units. Although this general trend also applies to the training situation at CIP, this Centre was able to counterbalance these effects

by increasing the pedagogic support to Centre scientists by hiring a Head of the Training Department with a doctoral degree in education, which is unique in the system, and by improving the coordination of training in the Centres along with enhanced pedagogic expertise by taking the leadership in leading ICT/KM for training and learning.
The Training Study made the following recommendations:
(1) CGIAR system:
1. Fully recognize training as an indispensable component of CGIAR's activities
2. Develop a uniform set of criteria and indicators of training outputs and outcomes; set up an inter-Centre focal group to develop such a set
3. Overcome the problems associated with the increasing dominance of short term training because of restricted funding

CIP endorsed these recommendations. CIP continues to support human capacity building as part of its research agenda. It is aware of the situation of limited unrestricted funds for training and invests them more strategically in capacity building research activities and ICT/KM for training.

(2) NARS:
1. Develop clearer understanding of areas of training in which CGIAR has a comparative advantage that relate to the Centres' research agenda
2. Make a stronger effort to clearly articulate their research and training needs
3. Take greater care in selecting candidates for CGIAR training
4. Centres should reduce their involvement in direct training of farmers and extension workers, except as an integral part of ongoing Centre research
CIP endorsed these recommendations. CIP collaborates very closely with its NARS partners, especially through its partnership programs. This includes the identification of research and training needs as part of joint research projects. Candidates for individual and group training are selected jointly with the active involvement of CIP scientists based in the regional offices. CIP continues to implement and study the impact of Farmer Field Schools as an integral part of the research agenda of the ICM Division.

(3) Centres:
1. Adopt a strategic stance to carry out training and promote learning compatible with their research priorities and develop strategies to do so in ways that strengthen (and sustain) NARS capacities
2. Develop appropriate quality assurance protocols for all types of training
3. Improve the efficiency and effectiveness of their training provisions by taking advantage of sharing experiences, best practices, functions and activities among Centres (e.g., OLR project of the ICT-KM program)
4. Ensure better coordination within and among Centres to enhance quality and coherence
5. Better cater for the heterogeneity of NARS and exploit advantages of ICT, such as e-learning
6. Closer coordination and cooperation among the Centres in strategic planning of training, assembly of databases, development of courseware, etc.

CIP endorsed these recommendations. CIP continues to provide training as part of its research agenda and works closely with its NARS partners to identify their needs for human capacity building. The research activities on human capacity building of the Impact Enhancement Division are designed to strengthen and improve the performance of NARS. CIP has a leading role in the OLR project that not only promotes the use of ICT/KM for training and learning, but also is in the process to develop and establish quality assurance standards for training in the CGIAR. CIP continues to use ICT to enhance its training functions. The active involvement of the Head of the Training Department with the community of CGIAR training officers helps to strengthen the coordination and cooperation among

Centres in the area of training. At the same time the Head of Training Department collaborates closely with CIP scientists in developing joint project proposals.

Training statistics

Over the past five years CIP was able to maintain the number of participants in both group events and individual trainees. Below the statistics for group and individual training at CIP from 2002-2006 are presented.

Table 1: Gender and regional distribution of CIP group training events 2002-2006

Group training	**2002**	**2003**	**2004**	**2005**	**2006**
Total number of events:	32	39	42	23	17
Participants:	877	588	507	416	439
Women	206	117	129	154	189
Men	671	471	378	262	250
Regions:					
Asia	151	47	64	50	16
Latin-America (w/o Peru)	117	102	65	150	93
HQ - Peru	250	218	211	132	164
Sub-Saharan Africa	37	1	29	30	24
CWANA (incl Turkey)	16	0	29	3	15
Developed	157	34	36	51	127

Table 2: Gender and regional distribution of individual trainees 2002-2006

Individual training	**2002**	**2003**	**2004**	**2005**	**2006**
Total number of trainees	76	158	134	177	136
Degree trainees	7	34	19	141	115
Non-degree trainees	69	124	115	36	21
Gender:					
Women	31	64	68	106	78
Men	45	60	66	71	58
Regions:					
Asia	0	1	0	28	16
Latin-America (w/o Peru)	2	125	118	22	9
HQ - Peru	74	0	0	109	75
Sub-Saharan Africa	0	0	0	4	14
CWANA (incl Turkey)	0	1	1	2	1
Developed	0	28	15	11	16

The relatively low figures about group and individual in the region, especially in sub-Saharan Africa and Asia, may be due to difficulties in reporting these numbers to headquarters. With the decrease in core-funded capacity building and the increase in project-associated training with restricted funds it has been become increasingly difficult to obtain and properly process the actual training data. Actually, the Training Study of the Science Council has addressed this issue. They recommend to systematize the reporting of training and to make the data collection more consistent across the System. The OLR project on quality assurance standards for training will address this issue and make recommendations to improve the current situation.

Annex 14
International Potato Centre (CIP) - Board Members 2002-2007

Name	Board Committees	Gender	Nationality	Discipline	Nominated by	2002	2003	2004	2005	2006	2007 projected
Takahashi, Josefina	M-PC	F	Peru	Plant Pathology	Member Co	x					
Kaneda,Chukichi	M-PC	M	Japan	Plant Breeding	Board	x					
MacKenzie, David Robert	C-BOT, C-EC, M-NC	M	United States	Plant Breeding	Board	x					
Sengooba, Theresa	M-PC	F	Uganda	Agronomy	Board	x	x				
Xuan, Zengpei	M-PC, M-AC	M	China	Information Tech	Board	x	x				
Huerta, Alfonso Pablo	M-PC	M	Peru	Economics	Member Co			x			
Salas, Carlos Antonio	M-PC	M	Peru	Genetics	Member Co	x	x	x			
Zandstra, Hubert George	M-EC	M	Canada	Agronomy	Ex-Officio	x	x	x	x		
Pehu, Eija	M-EC, C-PC	F	Finland	Plant Breeding	CGIAR	x	x	x	x		
Ohga, Keiji	M-PC, M-AC	M	Japan	Agric Sciences	Board	x	x	x	x	x	
Kim, Kang-kwun	V-BOT, M-EC, C-NC, M-AC	M	Korea, Republic	Horticulture	CGIAR	x	x	x	x	x	
Olcese, Orlando	M-PC, C-AC	M	Peru	Biochemistry	Member Co	x	x	x	x	x	x
Godfrey, James	C-AC, C-BOT, C-EC, M-NC, M-MC, C-RM	M	United Kingdom	Agricultural Entrepreneur	Board	x	x	x	x	x	x
Swaminathan, Madhura	V-BOT, M-EC, C-PC, M-AC, C-NC, M-PC	F	India	Economics	Board	x	x	x	x	x	x
Egger, Ruth	M-PC, M-NC	F	Switzerland	Economics/metrics	Board	x	x	x	x	x	x
Boronin, Alexander	M-PC	M	Russia	Genetics	CGIAR	x	x	x	x	x	x

Name	Board Committees	Gender	Nationality	Discipline	Nominated by	2002	2003	2004	2005	2006	2007 projected
Kuzwayo, Pauline	M-PC	F	South Africa	Nutrit/Pub Health	Board		x	x	x	x	x
Schuh, G. Edward	M-AC, M-RM, C-RM	M	USA	Economics	Board		x	x	x	x	x
Song, Jian	M-PC	M	China	Engineering	Board		x	x	x	x	x
Palma, Victor	M-PC, M-AC	M	Peru	Agro Economics	Member Co			x	x	x	x
Anderson, Pamela	M-EC	F	USA	Entomology	Ex Officio				x	x	x
Sayegh, Edward	C-AC, M-RM	M	Lebanon	Management	CGIAR						x

Notes: Board Committees – Acronyms

C	Chair	BOT	Board of Trustees
V	Vice-Chair	AC	Audit Committee
M	Member	EC	Executive Committee
NC	Nominating Committee		
PC	Program Committee		
RM	Risk Management Committee		

Nominated by

Member Co	Nominated by the Host Government
Ex-Officio	In their official capacity

Term Dates – End

Indef	The term end-date is indefinite.

Annex 15
Results of staff perception survey

% OF TOTAL RESPONDENTS WHO AGREE STRONGLY OR SOMEWHAT
[Some had "no opinion, especially the NRS-Other category]

	IRS n=50	**NRS Professional** n=148	**NRS Other** n=56
1. CIP's 'new vision' for moving forward is shared by you	93%	90%	68%
2. CIP's 'new vision' is shared by a great majority of the staff	72	70	51
3. CIP provides an environment conducive to innovative research	72	73	87
4. CIP's arrangements for the management of research are effective and inclusive	66	63	55
5. CIP's administrative and management systems are supportive of your work	63	65	52
6. The decentralized system of research at CIP works well	52	45	56
7. Staff-management relations at CIP are good	63	53	56
8. CIP provides a good overall work atmosphere	77	74	80
9. The performance management process provides good supervision and allows you to perform at your best.	71	54	57
10. Reports on project income and expenditure allow effective control of budget	65	54	40
11. Reports on project income and expenditure are provided to you in a timely fashion	59	30	16
12. The purchasing/admin. services provide items that are competitive in the market	56	61	44
13. The purchasing/admin services provide items in a timely fashion	57	68	53
14. Job opportunities at CIP attract the highest quality staff	57	54	54
15. There are good opportunities for professional advancement at CIP	44	33	27
16. There are good opportunities for the staff's professional training and development at CIP	46	39	33
17. The appropriately trained support staff is available to allow good quality research	61	63	61
18. CIP's restructuring of the way in which research is organized(research divisions and partnership programs) has been appropriate	57	59	44
19. Inputs from individual researchers are taken into consideration by management	74	47	31

% OF TOTAL RESPONDENTS WHO DISAGREE STRONGLY OR SOMEWHAT
[Some had "no opinion, especially the NRS-Other category]

	IRS n=50	**NRS Professional** n=148	**NRS Other** n=56
1. CIP's 'new vision' for moving forward is shared by you	2%	7%	8%
2. CIP's 'new vision' is shared by a great majority of the staff	16	15	23
3. CIP provides an environment conducive to innovative research	28	19	11
4. CIP's arrangements for the management of research are effective and inclusive	34	27	29
5. CIP's administrative and management systems are supportive of your work	34	34	43
6. The decentralized system of research at CIP works well	41	22	13
7. Staff-management relations at CIP are good	33	44	45
8. CIP provides a good overall work atmosphere	20	25	20
9. The performance management process provides good supervision and allows you to perform at your best.	27	45	40
10. Reports on project income and expenditure allow effective control of budget	30	18	20
11. Reports on project income and expenditure are provided to you in a timely fashion	36	23	18
12. The purchasing/admin. services provide items that are competitive in the market	23	32	44
13. The purchasing/admin services provide items in a timely fashion	27	26	42
14. Job opportunities at CIP attract the highest quality staff	41	43	45
15. There are good opportunities for professional advancement at CIP	47	65	64
16. There are good opportunities for the staff's professional training and development at CIP	50	57	57
17. The appropriately trained support staff is available to allow good quality research	29	25	24
18. CIP's restructuring of the way in which research is organized(research divisions and partnership programs) has been appropriate	35	17	15
19. Inputs from individual researchers are taken into consideration by management	21	26	23

Annex 16

Financial Statement- December 31, 2002 – 2007

	Actual Dec , 31 2002	**Actual** Dec , 31 2003	**Actual** Dec , 31 2004	**Actual** Dec , 31 2005	**Actual** Dec, 31 2006	**Projected** Dec, 31 2007
Financial Position						
Assets						
Cash and Cash equivalents	5,969	8,151	10,561	10,525	13,990	11,639
Investments current assets			99	537		500
Donors						
Unrestricted	445	1,486	1,044	561	625	384
Restricted	3,580	2,782	2,538	2,963	685	1,820
Other Current Assets	1,654	1,771	1,192	1,063	1,026	1,260
Total current Assets	11,648	14,190	15,434	15,649	16,326	15,603
Investments-non current assets		1,039	369	305	337	628
Fixed Assets- Net	2,860	2,596	2,745	2,768	3,711	3,651
Total Assets	**14,508**	**17,825**	**18,548**	**18,722**	**20,374**	**19,882**
Liabilities						
Current Liabilities						
Donors						
Unrestricted	1,062	1,082	716	1,228	871	850
Restricted	1	3,208	2,792	3,358	5,247	4,725
Other current liabilities	7,910	6,403	6,477	5,642	4,717	4,492
Total current liabilities	8,973	10,693	9,985	10,228	10,835	10,067
Long Term Liabilities			311	255	448	475
Net Assets						
Inappropriate / Undesignated	1,799	4,536	5,654	5,727	5,794	6,040

	Actual	**Actual**	**Actual**	**Actual**	**Actual**	**Projected**
Appropriated / Designated	3,736	2,596	2,598	2,512	3,297	3,300
Temporally Restricted						
Total Net Assets	5,535	7,132	8,252	8,239	9,091	9,340
Total Liabilities & Net Assets	**14,508**	**17,825**	**18,548**	**18,722**	**20,374**	**19,882**
Statement of Activities						
Unrestricted	8,035	7,964	8,957	8,113	8,907	7,732
Restricted	10,358	9,864	13,440	13,892	13,563	15,931
Others	326	387	279	293	639	630
Total Revenues	**18,719**	**18,215**	**22,676**	**22,298**	**23,109**	**24,293**
Expenses	19,697	17,847	22,362	22,315	23,297	24,540
Depreciation	360	321	347	879	887	900
Recovery of Indirect Cost	(725)	(804)	(1,151)	(969)	(1,142)	(1,393)
Total net Expenses	**19,332**	**17,364**	**21,558**	**22,225**	**23,042**	**24,047**
Surplus / (Deficit)	**(613)**	**851**	**1,118**	**73**	**67**	**246**

Annex 17
Acronyms

AGM	Annual General Meeting of the CGIAR
ART	Andean Roots and Tubers
A&H	Agriculture and Health
CAPRi	Collective Action and Property Rights (CGIAR System wide Program)
CAS-IP	Central Advisory Service on Intellectual Property
CBC	Centre Board Chair
CCER	Centre-Commissioned External Review
CDC	Centre Directors' Committee of the CGIAR
CIAT	International Centre for Tropical Agriculture
CIDA	Canadian International Development Agency
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
CONDESAN	Consortium for the Sustainable Development of the Andean Ecoregion
DCER	Donor-Commissioned External Review
DG	Director General
EPMR	External Program and Management Review
ERP	Enterprise Resource Planning System
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field Schools
GMP	Global Mountain Program
GRCC	Genetic Resources Conservation and Characterization
IAU	Internal Audit Unit
ICARDA	International Centre for Research on Dry Areas
ICM	Integrated Crop Management
ICRAF	World Agro forestry Centre
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICT-KM	Information and Communication Technology and Knowledge Management Program
IE	Impact Enhancement
IFPRI	International Crops Research Institute for the Semi-Arid Tropics
IIMI	International Irrigation Management Institute
IITA	International Institute for Tropical Agriculture
ILRI	International Livestock Research Institute
IPG	International Public Good
IPGRI	International Plant Genetic Resource Institute
IPRs	Intellectual Property Rights
IRRI	International Rice Research Institute
IRS	Internationally Recruited Research Scientists
ITU	Information and Technology Unit
IWMI	International Water Management Institute
LAC	Latin-America and the Caribbean
MDT	Millennium Development Target
MoU	Memorandum of Understanding
MTP	Medium-Term Plan
MDG	Millennium Development Goals
NARS	National Agricultural Research Systems
NEPAD	New Partnership for Africa's Development
NIRS	Near Infrared Reflectance Sprectroscopy
NGOs	Non-governmental Organizations
NRM	Natural Resources Management

NRS	Nationally Recruited Scientists
OFSP	Orange-Fleshed Sweet potatoes
PDF	Post Doctoral Fellows
PCN	Potato Cyst Nematode
PMCA	Participatory Market Chain Approach
PRGA	The CGIAR System wide Program on Participatory Research and Gender Analysis
R&D	Research and Development
RIPs	Research Impact Pathways
RRS	Regionally Recruited Scientists
SC	Science Council
SIDA	Swedish International Development Cooperation Agency
SIUPA	System-wide Initiative on Urban and Peri-Urban Agriculture
SP	CGIAR System Priority
SSA	Sub-Saharan Africa
SWEP	System-wide Ecoregional Program
TPS	True Potato Seed
UH	Urban Harvest
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPWARD	Users' Perspective on Agricultural Research and Development
USAID	United States Agency for International Development
VITAA	Vitamin A for Africa Program
WARDA	Africa Rice Centre

CGIAR

Science Council Secretariat
c/o FAO
Viale delle Terme di Caracalla, snc
00153 Rome, Italy
www.sciencecouncil.cgiar.org

t +39 06 57056782
f +39 06 57053298
e sc-secretariat@fao.org

SCIENCE COUNCIL
CGIAR

TC/D/I0025E/1/3.08/300