

## SCIENCE COUNCIL OF THE CGIAR

### Strategy for the Implementation of the CGIAR System Priorities for Research: Update and suggestions for a consolidated process

*A background paper for ExCo-11  
September 30, 2006*

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#### **Summary**

The CGIAR endorsed the new System priorities for Research at AGM 2005. This paper summarises the initial allocations of Center project activities and budgets to System Priorities (SPs) based on the information provided by Centers and Challenge Programs in their MTPs for 2007-2009. In general, the allocations were made in a distributed, accounting fashion on a Center-by-Center basis. The MTP format has allowed little indication of the collaborative and cooperative research (and research planning) anticipated for the SPs at the System level. The Paper therefore suggests how framework plans might be developed for each of the 20 SPs indicating, in a general sense, which types of collaborative research approach might be required. The vehicles are not uniform - as the character of the research, and the number and size of partnerships in each SP influence this decision. Two major areas for CGIAR research, germplasm enhancement of staple crops and natural resource management at the landscape level, are suggested to be developed as large Systemwide programs. Two further areas, research on high value fruit and vegetables, and combined research on markets and rural institutions, are suggested to be suitable to be considered for new Challenge Programs with substantial external input. In other cases, the SC has suggested that interim studies and consideration of the concepts produced should be evaluated, before continuing to full proposal development and the selection of any particular research vehicle. The SC looks forward to working with the Alliance and relevant stakeholders to guide and accelerate the process of the definition and implementation of the SP research programs.

#### **Background**

At the Annual General Meeting of the CGIAR in December 2005, the Group endorsed the new SPs for Research.<sup>1</sup> In April 2006, the CGIAR's Executive Committee (ExCo) further endorsed a paper prepared by the SC on the implementation of the CGIAR SPs, which treated the principles in implementation and the process to be followed in a general fashion.<sup>2</sup> Part of the endorsed strategy was to set aside unimplemented Challenge Program (CP) proposals to open up opportunities for CGIAR groups and other experts to use CPs, and other CGIAR vehicles, to approach the new SPs. The SC Chair briefed the Alliance Executive and Deputies on these developments at the end of April, inviting the Alliance to take initiatives in proposing relevant systemwide vehicles to implement the Priorities.

The Centers and CPs developed the annually updated Medium Term Plans for the period 2007-2009 according to new guidelines in early 2006. These requested Centers and Programs to specify the allocation of Center research projects to the new SPs (and additional activities not included in

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<sup>1</sup> System Priorities for Research 2005-2015. Science Council. December 2005.

<sup>2</sup> Implementation of the CGIAR Priorities for Research: A Working Document on the Suggested Process. Science Council working Paper for ExCo-10, April 2006.

the SPs to the categories of development, new research and stand-alone training). The MTPs were submitted to the SC for review in June 2006. This has allowed the SC Secretariat to assemble a preliminary matrix identifying the contribution of Centers and CPs to Priorities aggregated at the level of the System. The matrix of Project Budgets by SPs is attached as an **Annex** to this document. It should be stressed that these allocations are based on the Centers' own estimations. As discussed below, the SC has reservations about the utility of some of the allocations and has used the apparent current allocation of total funding to different SPs and areas simply as indicative figures for discussion.

Simultaneously, the ExCo established an Ad Hoc Committee to examine the funding of the new SPs. The deliberations of this Ad-Hoc Committee will help inform a donor Coordination Forum on the steps towards collective funding of the SPs. This Ad Hoc Committee has also used the matrix of current funding across MTP projects and Priorities as the basis for their initial analysis. They have requested a further analysis of four SPs (1C, 3A, 4B, 5D) chosen for comparative purposes and differing in science requirements, Center contributions and size.<sup>3</sup>

This paper reviews the progress made to date in identifying project research contributing to System Priorities. It points out the limitations of proceeding through the reports (MTPs) of individual Centers and suggests the necessary steps at the System level that will be needed to catalyse truly new approaches for the CGIAR. In the process, a brief assessment of means to approach each of the individual Priorities is presented, including the Priorities selected by the ExCo Ad Hoc Committee.

### **The aim of the System Priorities**

The aim of the SC in leading the development of the new SPs for the CGIAR was five fold:

- To develop a more cohesive and better-focussed, high quality research program
- To focus research on priority topics (i.e. avoid dispersion and overlaps) and the production of International Public Goods (IPGs)
- To mobilize research capacity across the System and to help develop consortia where necessary, with partners outside the System
- To enhance cooperation of the different elements of the System
- To enhance accountability

It was further intended that the Centers, the CPs, other Systemwide entities and their partners outside the system would initiate and lead the development of consortia appropriate for tackling the SPs according to their respective comparative advantages.

### **The results of the MTP process in relation to System Priorities**

Centers were requested for the first time in 2006 to identify to which SPs their MTP research projects were directed. Assuming that it was too early in the process of change towards developing system priorities for research, and noting the relatively large number of activities across the system directed not at research but at activities best described as development assistance or at stand-alone capacity building, Centers were expected to also identify projects

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<sup>3</sup> The individual SPs are listed in the latter part of this document; **1C** is conservation of indigenous livestock; **3A** is research on high-value fruit and vegetables; **4B** is sustaining and managing aquatic ecosystems; and **5D** is identification of rural development strategies for poverty alleviation.

directed to these goals, or to new research not included in the Priorities. It should be remembered that the SC had advised that approximately 80% of total budget should be directed towards priority research (the SPs) with the balance allocated to these other categories.

In general, the response of the Centers, as described in their MTPs, helps identify Centers and Programs which wish to contribute to individual SPs. The synthesised results of the project by Priority matrix allocation is given in an Annex. However, the SC finds that a more coordinated, planned and synthetic approach is needed to develop true System-level approaches to research. The Centers have tended to distribute current activities across a large number of the SP titles, rather than to focus. This has led to virtually all activities being allocated (in an accounting rather than research sense) to the SPs (apparently 93% of the combined, System level budget). Few Centers identify development activities (only seven Centers accounting for only 3% of total System budget in 2007), stand-alone training (8 Centers and 2% of budget) and only small amounts of Center-specific new research appears to be going on (at 7 Centers or programs accounting for about 2% of total budget - with about a third of this total suggested to be contributed by the SSA-CP which is still at the process stage of development). In some cases, where a painstaking accounting has been developed (e.g. of primary and secondary contributions of Center project research to SPs), the effect of the secondary allocations is to dilute the major research focus of a Center and to distribute activities which have relatively small budgets and low potential for impact in stand-alone contributions.

Thus, simply summing the Center-specific allocations of current research efforts results in a re-description of the CGIAR portfolio but does not result in a better planned or more cohesive research program at the System level - which is the intent of the SPs. Whilst the often well-written MTPs indicate much higher awareness of the need to produce IPGs from CGIAR research (another plank of the SC approach) too little time may have elapsed between the endorsement of the SPs and the call to Centers to develop the MTPs for cooperative actions targeted at addressing the SPs. New System-level planning steps for the refinement of specific research goals and the collaborative implementation of the SPs are required. Also, in the future, the SC would prefer to see Centers and CPs increasing the targeting of efforts and the allocation of MTP projects - more likely sets of projects - to the SP which is driving the research thrust.

### **Other initiatives**

In the first half of 2006, one new inter-Center approach (the Amazon Initiative) has been proposed. This has been developed as an ecoregional program not explicitly linked to other aspects of SPs 1, 2D or 4A (to which, however, it might contribute) and has been examined by the SC elsewhere.

Further understanding about opportunities for syntheses in research, or missed opportunities in earlier research planning, has come, for instance, as a by-product from the development of the African regional MTPs (a process that is continuing and which in some cases has followed aspects of additional research agendas not included in the SPs). However, over and above a regional approach, there is a need for the CGIAR System to understand more fully the totality of its research and its research focus on any particular priority. The recent experiences with planning of CP consortia has provided some lessons also; but in the case of some of the SPs (such as the genetic enhancement of staple crops) much of the research is not to be developed *de novo* but to be better defined, rationalised and focused. In newer areas, such as high value fruit and vegetables, there is the opportunity to take into account international activities by CGIAR-associated institutes, other advanced institutes and research partners to develop truly global,

consortium approaches to the SP research.

### **System-wide engagement in planning for Priority research: the development of framework plans**

The Science Council's overall aim is the development, within three years, of 20 programs of research on which the CGIAR spends at least 80% of its total budget. The vehicles for each of these coordinated programs of research will vary: some may be CPs, some will be Systemwide Programs and still others may find expression as virtual Task Forces– the implementation vehicles will depend on the nature of the research. Thus the original **framework plans** will be written as complete SWEP, CP or Task Force proposals and the work plans and performance reports will be updated annually by the lead Center or coordinating mechanism. Progress towards the declared and jointly agreed program outputs will be traceable in the MTPs of contributing Centers and Programs.

### **What is a Framework Plan?**

In moving from a general descriptive phase to the need for collaborative ways to plan and implement the SPs, it is suggested that the System should move rapidly to the development of framework plans for each Priority (as outlined in reference 2). Framework plans are not new formats to which existing activities are merely fitted. They will, however, describe the CGIAR's research role in the context of global initiatives and cutting edge research being carried out elsewhere, by agencies, in industry, ARIs and NARS. They will, ideally, be compiled with the help of international experts in the field and all will be subject to peer review.

A framework plan is a research plan which aims to:

- identify clear 5 and 10 year goals for the strands of research within a SP
- more closely define the scope, boundaries and timeframes of the plan for research
- define the means to conduct world-class research which addresses these specific goals
- link CGIAR research to other actors, including external providers of research excellence, and to place CGIAR and external collaborative approaches in appropriate relation to relevant ongoing or upcoming global initiatives
- identify the responsibilities across identified elements of the System and its partners (including for developing syntheses, policy and coordination of the SP approach), which will be translated into jointly planned output targets in MTPs
- estimate the optimal budget and other resources required to allow the SP research to proceed.

In some cases the specific goals for research (described in reference 1 and given here) themselves will need refinement and better descriptions and targeting of the scope of research. CGIAR planning with other expert input is expected to identify and prioritise research approaches. System-level planning should allow Centres to reconsider their current programs and plan future activities in a new manner, seeking enhanced external collaboration and rationalisation of research effort across the System where there is duplication. The plans will be sufficiently specific that they can serve as stand alone proposals with time bound output targets linked to MTP reporting. However, the SPs are dynamic, not monolithic, entities with large numbers of important interactions evident between different SPs. In time, therefore there will be opportunity to build the cross-cutting themes across the research building blocks of the SPs.

Further detail on the development of such framework plans can be found in existing guidelines<sup>4,5</sup> which will be supplemented by guidelines on the criteria by which the SC will judge, for example, CP proposals. The first framework plans should be available as models over the next three months. The SC will review concept notes (CPs) or draft framework plans (SWEPs, Task Forces) before endorsing the further development of framework plans. Full proposals will also be evaluated by an SC-managed process before endorsement for funding.

### **The suggested strategy for implementation**

The following section focuses on means to plan the required research rather than at this stage identifying all the vehicles for research. This is because the best means for conducting research is expected to arise from the planning step (with better knowledge of the particular research scope and requirements, the extent of partnerships etc.) and because it has been recognised that a “one size fits all” approach is not desirable (reference 2). However, a small number of the Priorities that might lend themselves directly, or after refinement, to development as potential Challenge Programs, are identified.

The discussion uses the information relating to the SPs provided by Centers and CPs in the recently submitted MTPs (2007-2009, with budget figures referring to the first year of the plan – see Annex). The framework plans should focus on refining and addressing the specific goals for each SP defined in reference 1 and repeated here. The paper’s suggestions for Centers or the formation of other groupings to lead the development of SP framework plans are not prescriptive and the SC looks forward to working with the Alliance to define the best means to convene the development of framework plans. Given the rather slow progress to date - in what is expected to be a three-year period of adjustment to the new SPs - the SC recommends that the process is accelerated in 2006 and 2007.

### **Priority 1A: Conservation and characterization of staple crops**

*Current position:* CIAT, CIMMYT, CIP, ICARDA, ICRISAT, IFPRI, IITA, IPGRI, IRRI, WARDA, Generation CP all contribute to this SP, expecting to commit approximately US\$38 million (or 7% of the total projected system budget in 2007).

This area represents one of the traditional heartlands of CGIAR research and associated activities with a number of CGIAR Centers holding gene banks of accessions important for global agriculture. Allied to the CGIAR gene banks, the Global Biodiversity Trust is examining national crop-specific conservation strategies in the global context. Moreover, in this area of conservation, characterisation and use, the Centers are already linked by a System-wide program, the Systemwide Genetic Resources Program (SGRP), which has been instrumental and effective in organising collaborative action. A new phase of upgrading of Center gene banks and information on gene bank holdings will be undertaken. It is likely that partners in this putative SP can take advantage of meetings already planned by the SGRP in relation to System-wide action. *It is recommended therefore that the Secretariat of the SGRP convenes the 1A consortium to develop a draft framework plan for confirmation and final fine tuning at meetings in January 2007.*

The framework plan should address the following specific goals:

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<sup>4</sup> Criteria for Assessing Proposals for new Systemwide Programs. CGIAR Science Council, January 2006. [www.sciencecouncil.cgiar.org/publications/pdf/SWPs.pdf](http://www.sciencecouncil.cgiar.org/publications/pdf/SWPs.pdf)

<sup>5</sup> CGIAR process and guidelines for developing and implementing Challenge Programs. CGIAR (not dated) [www.cgiar.org/pdf/cpprocessguide.pdf](http://www.cgiar.org/pdf/cpprocessguide.pdf)

*Specific goal 1:* Improved strategies and methodologies developed for *ex situ*, *in situ* and on-farm conservation and characterization

*Specific goal 2:* Collection, conservation, and dissemination of genetically diverse material (including cultivars and wild species), as appropriate within the context of an agreed rational global system of conservation

*Specific goal 3:* Detailed characterization of informative subsets of genetically diverse materials (core cultivar collections and representative wild relatives)

*Specific goal 4:* Genetic and genomic stocks (e.g. DNA banking, mutant collections, mapping populations, isogenic lines) assembled, conserved and distributed

*Specific goal 5:* Knowledge about the gene pools conserved, generated and disseminated

### **Priority 1B: Promoting conservation and characterization of under-utilized plant genetic resources to increase the income of the poor**

*Current position:* CIAT, CIFOR, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, WARDA all contribute to this SP, expecting to commit approximately US\$15 million (or 3% of the total projected system budget in 2007).

A more pronounced focus by the CGIAR on the conservation and characterisation of under-utilized plant genetic resources requires the streamlining of disparate activities undertaken formerly by Centers, and a closer awareness and alignment with other global players (for example, the International Center for Underutilised Crops, ICUC, and the GFAR Global Program). Knowledge of CGIAR and other partners planning livelihood analysis and marketing aspects will be required to properly integrate ambitions for the separate research to appear in 2D or 3D and 5B. It is recommended that contacts with such other players in relation to *a framework plan for 1B also be initiated by the SGRP Secretariat on behalf of the CGIAR actors*. Virtual exchanges could be pursued with potential partners with the view to holding a framework planning Meeting as soon as opportunities present, but certainly before 2008. *The completion of the framework plan for 1B should follow, and allow for the development of, the similar plan for 1A.*

The framework plan for 1B should address the following specific goals:

*Specific goal 1:* Strengthen knowledge of under-utilized plant genetic resources and identify opportunities for their use by the poor

*Specific goal 2:* Germplasm of key under-utilized plant species is collected, conserved and characterized

*Specific goal 3:* Improved processes, institutions, and capacity are developed and promoted to enhance the conservation and use of UPGR for the benefit of the poor

### **Priority 1C: Conservation of indigenous livestock**

*Current position:* CIP, ICARDA<sup>6</sup>, IFPRI, ILRI, IPGRI all contribute to this SP, expecting to commit approximately US\$6.35 million (or slightly over 1% of the total projected system budget in 2007).

It is not expected that the CGIAR will address the various SPs with equivalent resources. However, in the planning for the SPs it was clear that there are opportunities through which the CGIAR's research input could have multiplier effects when coupled with the global initiatives of

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<sup>6</sup>The Science Council notes that ICARDA, which participated in the above workshop and follow up, has moved its anticipated outputs for this SP between projects but its budget for this activity in 2007 is unclear.

other agencies. This opportunity was highlighted in a SC study on Animal and Fish Genetic Resources. That report confirms that a modest increase in CGIAR resources should be focussed in the area of livestock genetic resources and research should be developed which supports international efforts by the FAO in this field. The consortium should also take advantage of the experience of IPGRI in plant genetic resources policy. As a corollary, the SC hosted a workshop including the key CGIAR Centers<sup>7</sup> (see also 1D) and the FAO. As a result, the workshop (which continued under the auspices of the SGRP) has already refined the general areas of research in the light of active global initiatives and will define framework plans for submission to the SC by the end of 2006. *This is expected to be developed as a Systemwide approach, and the SC will work with this group as it develops the framework plan so that the elements of a model plan are incorporated.*

The framework plan for 1C should address the following specific goals

*Specific goal 1:* Indigenous breeds of livestock are characterized at molecular and phenotypic levels including analysis of genetic relatedness amongst important populations

*Specific goal 2:* Influence the establishment of policies conducive to the appropriate exchange, use, development and conservation of livestock diversity

*Specific goal 3:* In situ and ex situ conservation options are assessed and identified

#### **Priority 1D: Conservation of aquatic animal genetic resources**

*Current position:* CIP, IFPRI, IPGRI, WorldFish all contribute to this SP, expecting to commit approximately US\$1.33 million (or less than 1% of the total projected system budget in 2007).

*As with 1C, planning to develop a framework plan for 1D is underway, led by SGRP and WorldFish and linked to other CGIAR partners and the FAO through the SGRP. CIP's small declared budgetary contributions to 1C and 1D (as well as to 3C and 3D) are unclear.*

Specific goal: Develop an inventory and assess the value of important wild and improved stocks of aquaculture species, and formulate plans for their better utilization in aquaculture and for in situ and ex situ conservation

#### **Priority 2A: Maintaining and enhancing yields and yield potential of food staples**

*Current position:* CIAT, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, WARDA, Generation CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$44.75 million (or 8% of the total projected system budget in 2007).

Priorities 2A, 2B and 2C reflect heartland research for the CGIAR enhanced by new CPs. Collectively they represent about 23% of the total System budget. It will be important for the System to describe and streamline the broad extent of its work in the genetic enhancement of food staples and to describe the focus for the future on the two specific goals given below. Crop specific approaches are likely to remain in the same loci as currently but with the CGIAR seeking increasing returns through collaboration and through common genomics approaches, the Generation CP etc. Part of specific goal 1 will be to develop strategy in the light of global and NARS capacity in crop breeding and the development of the CGIAR's overall program in the future. There should be a rational connection to the framework plan for 1A.

*The SC recommends that the Alliance Executive appoints an external consultant to work with the Centers*

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<sup>7</sup> When all CGIAR Centers are not present (e.g. IFPRI, CIP in this case) it is expected that their roles are reflected through the major Center with whom they collaborate (e.g. ILRI in this case).

*conducting research on food staples and forages as soon as possible.* The consultant's role will be to help describe and unify the existing work of the System relating to priority 2A, and to address the specific capacity-building and research goals. Adequate time should be allowed for this study followed by face to face meetings between Centers and initiatives, and the agreement of a framework plan, for submission in 2007. *It is suggested that this large body of research should be coordinated as a Systemwide program to take advantage of new and existing platforms and relationships (the Generation CP, the Genomics Task Force, new Inter-Center collaborations in legume research etc.) paying special attention to the practical and synthetic value of developing bio-informatics approaches.*

The framework plan for 2A should address the following specific goals:

*Specific goal 1:* Enhance the capacity and efficiency of genetic improvement programs through approaches linking characterization and use

*Specific goal 2:* Identification and development of pro-poor traits in crops

### **Priority 2B: Tolerance to selected abiotic stresses**

*Current position:* CIAT, CIMMYT, CIP, ICARDA, ICRISAT, IFPRI, IITA, IPGRI, IRRI, WARDA, Generation CP, Water and Food CP all contribute to this SP, expecting to commit approximately US\$44 million (or 8% of the total projected system budget in 2007).

The SC notes and agrees that the work of the Generation CP (which is already an Inter-Center undertaking) is central to the research to be conducted under this Priority. *The SC recommends that the Generation CP be charged with developing the framework plan for this Priority in conjunction with contributing Centers and partners.* The SC further notes that the potential power of the research under this SP is through focussing on a small number of selected stresses to maximise resources. The first five years of the framework plan should reflect this focus. It is suggested that the Generation CP consider the pros and cons of absorbing any additional research into the existing CP structure or whether other models of research cooperation on this priority would be more suitable. GCP should work closely with the consultant working up the draft framework plan for 2A to ensure that only research into underlying mechanisms of stress tolerance and pre-breeding are included in 2B. Efforts downstream to include stress tolerance in germplasm for transfer to NARS should be included in the framework plan for 1A

General goal: To enhance the tolerance of crop species to selected abiotic stresses and so increase agricultural productivity and reduce risks in unfavourable agricultural environments

### **Priority 2C: Enhancing nutritional quality and safety**

*Current position:* CIAT, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, WARDA, Harvest Plus CP all contribute to this SP, expecting to commit approximately US\$37.8 million (or 7% of the total projected system budget in 2007).

The SC recognises that the work of the Harvest Plus CP on micronutrient enhancement is Central to research on this priority but that it is not yet adequately linked to the other CGIAR research targeted at other aspects of nutritional quality and safety, such as microbial toxin reduction or resistance. Defining outputs and roles is expected to refine impact-oriented CGIAR research in this area. *The SC suggests that IITA and Harvest Plus agree jointly to work with CGIAR partners to develop a framework plan for submission in the second half of 2007. This work should, as with 2B, be closely linked to the framework plan for 2A to ensure the appropriate partition of responsibilities.*

The framework plan for 2C should address the following specific goals:

*Specific goal 1:* Increase the content of micronutrients in the edible parts of crop plants through improved biotechnologies and breeding

*Specific goal 2:* Evaluation of bio-fortification strategies and introduction of the best means to enhance the diets of nutritionally disadvantaged populations in developing countries

*Specific goal 3:* To reduce the content of constitutive or microbial toxins in selected staples that affect quality, food safety and human health

**Priority 2D: Genetic enhancement of selected species to increase income generation by the poor**

*Current position:* CIAT, CIP, ICARDA, ICRAF, IFPRI, ILRI, IPGRI, IRRI, WorldFish all contribute to this SP, expecting to commit approximately US\$11.9 million (or 2% of the total projected system budget in 2007).

This Priority, as it stands, encompasses principally tree, livestock and aquaculture species, substantially based on current MTPs through 2009. It is suggested that ICRAF, ILRI and WorldFish seek the inputs of collaborating Centers and partners to produce a draft framework plan for this SP by mid-2007. This should allow the prior formulation of the framework plan for 3A to be taken into account, and considered in relation to specific goal 1. *Given the relatively low amounts of funds currently anticipated to be spread over the four areas, the SC will determine, on review of the draft framework plan, whether SP 2D gains from internal synergies or whether the research elements might be more profitably aligned with other aspects of the relevant commodity improvement contained in other SPs.*

The framework plan for 2D should address the following specific goals:

*Specific goal 1:* Increasing the yield and stability of high-value plant species and products through genetic enhancement

*Specific goal 2:* Develop improved germplasm of selected non-timber forest products

*Specific goal 3:* Smallholder livestock improved for tolerance to biotic and abiotic stresses

*Specific goal 4:* Tilapia and carp germplasm improved for aquaculture production traits

**Priority 3A: Increasing income from fruit and vegetables**

*Current position:* CIAT, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, IPGRI, IWMI, WARDA, SSA-CP all contribute to this SP, expecting to commit approximately US\$15.5 million (or 3% of the total projected system budget in 2007).

Prior to the endorsement of the System Priorities for research, work on fruit and vegetables was scattered throughout the CGIAR portfolio. The Centers now declare a substantial amount of research anticipated for 2007 and beyond. It is not clear if this amount was previously hidden, or that new research is rapidly being undertaken.

The most immediately relevant of such activities (judged by output targets in 2007) include; CIAT's continued interest in tropical fruits in LAC; ICARDA has recognised the value of dry land tree crops such as olive and date palm to livelihoods in the CWANA region and is already collaborating with AVRDC (as are other some other Centers) on vegetable improvement in line with its project on diversification; ICRAF has research planned on a number of tree products, although portioning the research correctly between this priority and others will be important; ICRISAT is focussed on its Africa garden initiative and establishing best practice for water management to grow high value commodities; IFPRI has socioeconomic research on contract

farming; and IPGRI is linking biodiversity and value added industries in a number of crops and has substantial research on *Musa*. The list is not exhaustive but shows the range of approaches.

Research in this area responds to the agreed global requirement to enhance incomes of the poor by providing opportunities through diversification of farming practices to include high value fruit and vegetables. Some of the commodities provide for nutritional diversification for producers. This research links to emerging global frameworks (such as the Global Horticultural Initiative convened by AVRDC) and other sources of expertise which lie outside the System. The GHI has already undertaken evaluations of regional priorities. Both global and regional public goods may be obtained through research on adequately prioritised target species for which markets exist or can be established at sufficient scale. Research on markets for specific high value fruit or vegetables commodities should be linked under this SP and could reinforce the stand-alone analyses of markets and producer organisations projected under Priority area 5.

It is extremely important that the System's contributions to this area be identified and rationalised at the outset, according to the CGIAR's comparative advantage in the light of other global initiatives. *The SC confirms its earlier view (expressed in reference 2) that this SP may be tackled best by a CP in concert with external actors.* Discussion and agreement of the scope for Specific goal 1 (below) will help establish the strategic considerations and breadth of the CGIAR approaches. Given the foregoing, the SC encourages the coordinated development and submission of a Challenge Program concept note, which should identify the CGIAR's research in a globally relevant program focussed on the provision of IPGs.

The framework plan for priority 3A should address the following specific goals:

*Specific goal 1:* Identify key species for research and assess their factor and product markets

*Specific goal 2:* Enhance production of selected fruit and vegetables through improvement of farming systems

### **Priority 3B: Income increases from livestock**

*Current position:* CIAT, CIP, ICARDA, ICRAF, IFPRI, IITA, ILRI, IPGRI, IWMI, WARDA, SSA-CP all contribute to this SP, expecting to commit approximately US\$20.88 million (or 4% of the total projected system budget in 2007).

A number of CGIAR Centers currently contribute to research on this Priority with the lion's share contributed by the programs of ILRI (including the system-wide livestock program, SLP). However, it is not yet clear if ILRI's program meets both specific goals in an adequate fashion or whether a more globally-balanced research approach, including the challenge of the future intensification of livestock systems, might be developed in the medium term with partner inputs (FAO, OIE). *The SC recommends that ILRI, including the SLP coordination mechanism, leads the development of a framework plan for Priority 3B.*

The framework plan for Priority 3B is expected to address the following specific goals:

*Specific goal 1:* Opportunities for livestock growth in high potential areas are identified and implemented sustainably.

*Specific goal 2:* Management of the intensification in livestock production is improved to limit the negative impacts on the poor and the environment.

### **Priority 3C: Enhancing incomes through increased productivity of fisheries and aquaculture**

*Current position:* CIP, IFPRI, IWMI, WARDA, WorldFish all contribute to this SP, expecting to

commit approximately US\$8 million (under 2% of the total projected system budget in 2007).

WorldFish is the CGIAR Center with a specific mandate for research on fisheries and aquaculture, and a substantial part of its current portfolio is committed to this Priority. It would nevertheless be useful for WorldFish to consider if there would be modifications or additions to its current approaches in a Systemwide consortium approach with global partners. *The SC looks forward to the development of a framework plan for more defined research addressing Priority 3C by the end of the first quarter of 2007.*

The framework plan for Priority 3C is expected to address the following specific goals:

*Specific goal 1:* A portfolio of options is provided that addresses the needs of the poor aquatic resource user and allows equitable accrual of benefits from improved productivity

*Specific goal 2:* The capacity of developing nations is augmented by creating institutions and policies that help them meet fish and seafood safety requirements in the most cost-effective manner

### **Priority 3D: Sustainable income generation from forests and trees**

*Current position:* CIFOR, CIP, ICRAF, IFPRI, IITA, IPGRI all contribute to this SP, expecting to commit approximately US\$9.47 million (or 2% of the total projected system budget in 2007).

The general goal for this SP (namely, to enhance livelihoods and sustainably secure and harness the value and benefits of forest and tree resources) is central to the mandate of CIFOR, which commits the largest share of budgetary resources to this Priority. ICRAF and IITA also contribute substantial research on tree products. The SC recommends that CIFOR convene a meeting of all of the interested parties to develop a framework plan by the end of the first quarter of 2007. The preferred form of the research linkages with the tree improvement research described under SP 2D should be considered.

The framework plan for Priority 3D should address the following specific goal:

*Specific goal:* Improve opportunities for the market exploitation of a range of forest products by the poor

### **Priority 4A: Integrated land, water and forest management at landscape level**

*Current position:* CIAT, CIFOR, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, IWMI, WARDA, WorldFish, Water and Food CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$43.37 million (or 8% of the total projected system budget in 2007).

Fourteen of the 15 Centers and two of the CPs describe research contributing to this Priority, but, even more than most of the work related to the the new Priorities, the research has not been planned as a coherent program. There will need to be a set of meetings to start to evaluate how to integrate research at the landscape level, including perhaps the need to select joint research sites, bearing in mind the central role that policy research will also play. There are at least three existing communities of practice in the CGIAR relevant to this Priority: the INRM Group, the Consortium for Spatial Information and CAPRI, which should be involved in the development of a framework plan. Improving or extending research linkages to existing SWEPs and CPs (such as the ASB, the basin approach of the Water and Food CP) appear to be attractive opportunities to capitalise on existing knowledge and partnerships. However, creating a fully integrated CGIAR approach to the issues of landscape management is challenging. Noting the earlier inter-Center cooperation occasioned by the INRM Group, *the SC invites the Alliance Executive to develop a*

*framework plan for this SP as a Systemwide program) including the definition of a rigorous methodological approach.*

The framework plan for Priority 4A should address the following specific goals:

*Specific goal 1:* To develop analytical methods and tools for the management of multiple use landscapes with a focus on sustainable productivity enhancement

*Specific goal 2:* To enhance the management of landscapes through changing stakeholder awareness and capacity for social-ecological planning at landscape and farm levels

*Specific goal 3:* Establish effective rights and opportunities to ensure that the poor benefit equitably from forests and tree resources

*Specific goal 4:* Optimize long-term productive use of water resources in river basins

*Specific goal 5:* Creating multiple benefits and improved governance of environmental resources through the harmonization of inter-sectoral policies and institutions

#### **Priority 4B: Sustaining and managing aquatic ecosystems for food and livelihoods**

*Current position:* CIP, IFPRI, IWMI, WARDA, WorldFish, Water and Food CP all contribute to this SP, expecting to commit approximately US\$13 million (or between 2 and 3% of the total projected system budget in 2007).

Sustaining aquatic ecosystems and fish production in the face of widespread overfishing and other forms of environmental degradation is a global challenge. For the CGIAR, this Priority falls squarely within the responsibilities of WorldFish, which has growing linkages within the System, particularly with IWMI and the Water and Food Challenge Program. Nevertheless, the bulk of WorldFish's partners in this research area may lie outside the System. The WorldFish MTP for 2007-2009 reveals new thinking on approaches to small-scale fisheries, which would be central to research on this SP. The Center plans to raise the approach to the level of a "campaign" with international partners. This raises the possibility that 4B may be suitable to approach as a CP after further planning. *The SC therefore recommends that WorldFish convenes the development of a framework plan for Priority 4B indicating the most appropriate vehicle for addressing the following specific goals:*

The framework plan for Priority 4B should address the following specific goals:

*Specific goal 1:* Identification of viable governance and management systems that sustain aquatic ecosystems and increase the sustainable benefits that poor households derive from these ecosystems and their resources

*Specific goal 2:* Develop tools for biological assessment of aquatic ecosystems and their resources, valuation and management in data poor environments and development of the capacity to use and apply them

#### **Priority 4C: Improving water productivity**

*Current position:* CIAT, CIFOR, CIP, ICARDA, ICRAF, IFPRI, IITA, ILRI, IPGRI, IRRI, IWMI, WARDA, WorldFish, Water and Food CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$28.3 million (or 5% of the total projected system budget in 2007).

There are many aspects of research on water undertaken by the different CGIAR Centers and CPs, which are insufficiently articulated as a System level approach to the key area of water productivity. Just over half of current research (on a budgetary basis) is contributed by IWMI and the Water and Food CP. *The SC recommends that IWMI take the lead in developing such a framework plan for Priority 4C, in which institutional responsibility can be clearly identified for agreed*

outputs. The specific goals identified for this SP are very general, and a requirement for the framework plan will be to focus on time-bound research addressing the goals in a specific fashion. Depending upon the scope of the research proposed, thought may be given to whether the work could be accomplished by increasing the scope of the Water and Food CP, or whether the WFCP should continue as a partner in the overall plan with others. The framework plan should address the following specific goals:

The framework plan for Priority 4C should address the following specific goals:

*Specific goal 1:* Improved management practices that enhance the productivity of water

*Specific goal 2:* Enhance the sustainable development of water resources

*Specific goal 3:* Improved water-focused policies and institutions

#### **Priority 4D: Sustainable agro-ecological intensification in low-and high-potential environments**

*Current position:* CIAT, CIFOR, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, IWMI, WARDA, Water and Food CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$37.42 million (or 7% of the total projected system budget in 2007).

This Priority covers a number of aspects of natural resource management research critical for the overall sustainability of agriculture and to which 14 Centers and two CPs contribute component research. There are also a number of systemwide programs (such as the rice-wheat Consortium, and the newly structured SWP on IPM) that will have important research and partnerships to contribute to the development of an overall approach. *The SC invites the Alliance Executive to approach this large area in two steps. The first would be to describe a revised problem statement in relation to the rehabilitation of degraded agroecologies in a Challenge Program concept note, refining the scope of research that might be required.* Subject to review by the SC, a decision would be taken as how best to progress a feasible and synthetic program addressing this very important SP.

The framework plan for Priority 4D is currently stated to address the following specific goals:

*Specific goal 1:* To improve understanding of degradation thresholds and irreversibility, and the conditions necessary for success in low productivity areas

*Specific goal 2:* Protect the livelihoods of rural livestock keepers in low potential areas

*Specific goal 3:* To identify domains of potential adoption and improvement of technologies for improving soil productivity, preventing degradation and for rehabilitating degraded lands

*Specific goal 4:* Evaluate the production potential of high productivity systems and their constraints and trends

*Specific goal 5:* To improve soil quality to sustain increases in productivity, stability, and environmental services through greater understanding of processes that govern soil quality and trends in soil quality in intensive systems

*Specific goal 6:* Design methods to manage and enhance biodiversity to increase income, reduce risk and vulnerability through integrated pest management (IPM), crop diversification (and rotations), and genetic diversity within crop species

*Specific goal 7:* To optimize productivity at high input use (e.g. labour, nutrients, pest control practices, water, seed, and feed) through understanding and managing spatial and temporal variation

*Specific goal 8:* Identify social, economic, policy and institutional factors that determine decision-making about managing natural resources in intensive production systems and target interventions accordingly

### **Priority 5A: Science and technology policies and institutions**

*Current position:* CIAT, CIFOR, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, WARDA, WorldFish, Water and Food CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$25.92 million (or 5% of the total projected system budget in 2007).

Whilst many Centers and CPs have research and research outputs which may contribute to one or other goals of this Priority, there is currently little effective synthesis or means to distil planning inputs for the System as a whole (as opposed to individual commodities or sectors) or syntheses supporting policy advice and advocacy. Indeed, as envisaged, this Priority requires for its proper functioning not only the Centers but linkages between Centers (e.g. the Consortium for Spatial information, the SGRP for genetic resources policy) and elements of the System's Office (including, for example, the GRPC, the CAS-IP, the Science Council's Standing Panel on Impact Assessment and the knowledge management program or ICTKM). There will be a need to invent, develop and manage a data management platform for numerous types of data (e.g. impact assessments, GIS data layers, social science data). There will be a need to understand what the aims for policy advice will be and how these will be developed. *The SC proposes to develop a strategic study and Report on the means by which the System might address the concepts underpinning the planning and policy advocacy functions at the System level.* This will be a necessary first step before other activities are proposed.

Other specific goals of this priority (and of 5B and 5C) relate to institutional research. The SC is seeking additional input into the requirements and framework for institutional research through meetings with the World Bank and concerned elements of the CGIAR. The first of these is expected to take place in January 2007, following which, a better timetable will be developed for the framework plans for Priorities 5A, 5B and 5C.

The specific goals to be addressed by a framework plan for 5A were described as:

*Specific goal 1:* To enhance technology strategies and priority setting

*Specific goal 2:* Improving policies and capacity in national systems to conform with and sustain the principles of international treaties relating to genetic resources

*Specific goal 3:* Improving incentives for technology generation, access and use

*Specific goal 4:* Improving the regulation of new technology

*Specific goal 5:* Enhancing the structure, conduct and performance of knowledge-intensive institutions

### **Priority 5B: Making international and domestic markets work for the poor**

*Current position:* CIAT, CIFOR, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, IWMI, WARDA, WorldFish, Water and Food CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$18.74 million (or 4% of the total projected system budget in 2007).

The Centers and CPs declare that nearly US\$19 million will be spent on market-related research by the System in 2007. However, the SC considers that the focus of an internationally relevant and quality portfolio of research of that magnitude has yet to be determined. Further, the SC considers that research on markets is a particular kind of institutional research and it will be the subject of workshops with development agencies in early 2007 (see discussion of 5A). Following the better definition of research required in this area - and on 5C (producer organisations) - *the SC suggests that research on institutions may be suitable for a tightly focussed and time bound Challenge*

*Program.* Taking advantage of what the CGIAR currently does well, a more dynamic interaction with scientists and Centers of excellence on poverty and institutional research should be sought to enhance competitiveness and quality. The outline of the framework program should thus be developed initially as a CP concept note.

The specific goals to be addressed by a framework plan for 5B were earlier specified as:

*Specific goal 1:* Enhance livelihoods and competitiveness for smallholder producers and food safety for consumers influenced by changes in national and international markets

*Specific goal 2:* Improve the marketing environment for smallholders by improving the efficiency of domestic markets

#### **Priority 5C: Rural institutions and their governance**

*Current position:* CIAT, CIFOR, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, IWMI, WARDA, WorldFish, Water and Food CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$26 million (or 5% of the total projected system budget in 2007).

As with 5A and 5B, the SC seeks to develop dialogue with Development agencies to help identify the entry points for CGIAR research before calling for a discrete CP concept note, which combines work on markets (5B) and other rural institutions (5C). Interactions with non-CGIAR Centers of excellence is required to raise the quality of the overall contribution.

The specific goals to be addressed by a framework plan for 5C were:

*Specific goal 1:* Identify mechanisms for the strengthening of producers' organizations and for modes of participatory research

*Specific goal 2:* Identify new forms of partnership with NARS, the private sector, public extension agencies, NGOs and producers' organizations, and public agencies from other sectors, such as environment and health to enhance the conduct and impact from agricultural research

#### **Priority 5D: Improving research and development options to reduce rural poverty and vulnerability**

*Current position:* CIAT, CIFOR, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IRRI, IWMI, WARDA, WorldFish, Generation CP, Water and Food CP, SSA-CP all contribute to this SP, expecting to commit approximately US\$47 million (or 9% of the total projected system budget in 2007).

A large number of Centers and programs have allotted projects or parts of projects against this Priority, leading to a great variety of output targets being attributed to Priority 5D. Many of these appear to be research outputs that would be much more appropriately allotted to other Priorities (natural resource management, germplasm enhancement, or enhancing technology strategies) or to capacity building, networking or producing individual country strategies. It seems therefore that the very high allocation to this Priority (at US\$47 million it would be the single largest Priority based on the Center's allocations of budget) may result in part from a lack of a clear understanding of the scope of the goals of the Priority and/or to a less than careful description by MTP respondents of which outputs within projects should correctly be allocated to this Priority.

*The SC believes that this SP requires tighter definition, and the quality of poverty-related research in the CGIAR to be enhanced through interaction with additional, external research inputs. The SC will convene a small workshop (30 persons); equally drawn from CGIAR scientists and global poverty*

experts, to more closely define the role for CGIAR research in this area. The outcome of the workshop is expected to inform directly the goal and the required research of this SP. It will also provide an initial forum for collaboration with groups outside the CGIAR who will be important collaborators and mentors in future research. It is likely that future, better-defined allocations to 5D (and probably a reallocation of some misallocated resources) will result in a more modest budgetary allocation also.

Currently, the single specific goal of this Priority is:

*Specific goal:* To identify agricultural research and development pathways, in order to implement options to reduce rural poverty at global and regional levels

**PROJECT BUDGETS BY SYSTEM PRIORITIES - 2007**

Proposal (MTPs 2007-2009)

(Amounts in USD '000)

Center or CP	Project number	Title	1A	1B	1C	1D	2A	2B	2C	2D	3A	3B	3C	3D	4A	4B	4C	4D	5A	5B	5C	5D	Dev. activities	Stand-alone training	New research area	TOTAL
CIAT	TOTAL		9,068	902	-	-	2,340	2,376	2,413	796	981	1,412	-	-	5,522	-	293	2,548	731	3,199	3,404	472	416	2,089	2,389	41,351
CIFOR	TOTAL		-	809	-	-	-	-	-	-	-	-	-	3,456	4,620	-	164	49	606	1,842	2,607	2,347	-	-	-	16,500
CIMMYT	TOTAL		3,449	-	-	-	5,747	12,166	5,465	-	203	-	-	-	-	-	-	2,435	1,186	592	296	-	4,407	1,800	-	37,746
CIP	TOTAL		1,587	229	6	6	2,331	1,235	1,056	806	1,623	38	6	6	1,708	37	304	2,336	1,773	2,004	1,433	3,707	-	-	-	22,231
ICARDA	TOTAL		1,498	151	-	-	5,130	1,111	421	262	1,043	551	-	-	531	-	3,002	3,811	1,812	45	628	1,336	1,255	94	-	22,681
ICRAF	TOTAL		-	992	-	-	23	-	23	1,594	2,202	23	-	2,513	5,730	-	1,625	1,735	3,004	855	4,453	2,797	296	906	1,040	29,811
ICRISAT	TOTAL		1,909	636	-	-	4,684	3,490	2,978	-	3,197	-	-	-	3,312	-	-	3,313	1,397	1,135	698	1,135	1,802	848	1,486	32,020
IFPRI	TOTAL		1,225	742	743	65	1,228	1,095	1,320	1,475	1,527	1,526	705	523	1,684	196	554	1,660	3,386	1,440	3,502	5,198	3,044	5,100	1,814	39,752
IITA	TOTAL		2,718	1,309	-	-	10,839	5,135	4,198	-	1,510	1,209	-	2,265	3,196	-	2,216	4,639	2,618	3,238	629	4,934	-	-	-	50,653
ILRI	TOTAL		-	1,100	4,746	-	270	-	270	4,430	-	14,615	-	-	1,250	-	660	3,534	1,500	480	910	6,635	-	-	-	40,400
IPGRI	TOTAL		10,587	7,402	856	711	1,318	235	411	298	1,493	225	-	710	1,393	-	80	1,421	4,492	452	2,335	3,030	680	237	194	38,560
IRRI	TOTAL		1,911	361	-	-	7,730	5,888	3,198	198	-	-	-	-	2,351	-	2,644	3,772	1,649	1,448	1,043	4,305	-	604	930	38,032
IWMI	TOTAL		-	-	-	-	-	-	-	-	1,083	993	1,135	-	6,087	2,270	9,503	2,269	-	310	606	1,534	-	-	-	25,790
WARDA	TOTAL		880	560	-	-	2,030	1,010	290	-	260	20	170	-	870	610	480	1,740	460	270	590	2,030	-	-	-	12,270
WorldFish	TOTAL		-	-	-	550	-	-	-	2,060	-	-	6,010	-	1,010	7,770	430	-	540	390	460	960	-	-	-	20,180
Generation CP	TOTAL		3,232	-	-	-	818	9,982	-	-	-	-	-	-	-	-	-	-	-	-	-	3,582	-	-	-	17,614
CP HarvestPlus	TOTAL		-	-	-	-	-	-	15,763	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,763
CPWF	TOTAL		-	-	-	-	-	330	-	-	-	-	-	-	3,305	2,143	6,117	1,211	285	285	1,814	1,860	-	-	-	17,350
SSA CP	TOTAL		-	-	-	-	268	-	-	-	346	266	-	-	807	-	226	943	477	754	647	1,187	1,515	-	3,024	10,460
<b>TOTAL</b>			<b>38,064</b>	<b>15,193</b>	<b>6,351</b>	<b>1,332</b>	<b>44,756</b>	<b>44,053</b>	<b>37,806</b>	<b>11,919</b>	<b>15,468</b>	<b>20,878</b>	<b>8,026</b>	<b>9,473</b>	<b>43,376</b>	<b>13,026</b>	<b>28,298</b>	<b>37,416</b>	<b>25,916</b>	<b>18,739</b>	<b>26,055</b>	<b>47,049</b>	<b>13,415</b>	<b>11,678</b>	<b>10,877</b>	<b>529,164</b>

Budget % by sub-priority	7%	3%	1%	0%	8%	8%	7%	2%	3%	4%	2%	2%	8%	2%	5%	7%	5%	4%	5%	9%	3%	2%	2%
Budget % by priority	12%				26%				10%				23%				22%				7%		