

A Regional Approach to Setting Research Priorities and Implementation: Towards Satisfying National, Regional and Global Concerns (1)

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ABSTRACT. Regionalization of agricultural research across countries has received considerable attention in recent years, with the establishment of regional and sub-regional organizations in most regions. Recently, the CGIAR System has called for a regional approach to research involving bottom-up priority-setting and implementation, and integrating this with global priority-setting. This paper explores the possibility of developing an approach for research priority-setting that would satisfy national, regional and global expectations of regionalization and allow the regional and sub-regional organizations to assume a bigger role. The paper also considers how the CGIAR Centres may support this priority-setting process and how they may use it to define their regional activities. A review of existing regional research initiatives show the many models in use, with different extents of collaboration, and with different challenges and promises. Regional priorities can strengthen the relevance of agricultural research in a region or sub-region. A description of a relatively generic approach to establishing regional priorities is presented. Different research organizations that are present in a region can use the research priorities to enable their work, and it is possible for CGIAR Centres to participate in the regional agenda while respecting the global nature of the CGIAR System. The integration of regional priorities into the CGIAR global research agenda is an area where there is little experience in the CGIAR System. The challenge for the CGIAR is to determine how to maintain a global focus in its agenda while promoting a coordinated regional approach to research planning and implementation. Priority-setting in the CGIAR will become even more of an ongoing process while the bottom-up regional approach to research planning, priority-setting and implementation is established in all regions.

KEYWORDS. Regional approach, priority-setting, agricultural research, regional organizations, stakeholders, consultation.

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INTRODUCTION

Regionalization of agricultural research across countries has received considerable attention in recent years (Gijsbers and Contant, 1996; Eponou, 1998; Perrault, 2001; TAC, 2001; de Janvry and Kassam, 2001, 2004). In most regions or sub-regions, regional and sub-regional research organizations (ROs and SROs) have been established or have been active for a number of years. In the current Vision and Strategy of the Consultative Group on International Agricultural Research (CGIAR), adoption of a regional approach to research planning, priority-setting and implementation, and integrating this with global priority-setting, is one of the seven key strategic planks underpinning its mode of operation (TAC, 2000). This has received an important impulse of support from the Global Forum on Agricultural Research (GFAR) (GFAR, 2001).

There are several generic advantages of a regional approach to research, as elaborated in de Janvry and Kassam (2001, 2004) and TAC (2001). Key advantages include: (a) economies of scale in research (due to high fixed entry costs) that can be captured through a regional approach when this would be difficult at the national level; this is particularly important for small and/or poor countries, and for high-technology research undertakings with expensive equipment and skills; (b) positive externalities (the main cause of the well-known under-investment in research) that can be better internalized at the regional level than at the national level, creating greater incentives to invest in research; (c) division of labour and specialization among the scientists in the region on a comparative advantage basis; (d) elevating research priorities above national political cycles to give greater continuity in research undertakings; (f) giving guidance and coherence to donors by providing an overall framework with well-defined research priorities; and (g) opportunities for scientists to exchange information on research issues specific to the region.

Depending on the national or international perspective of regionalization, the perceived benefits are quite different. From the perspective of the national agricultural research organizations, regional research is meant to address topics that cannot be addressed sufficiently well at the national level, because the research is too expensive, the competency is not available, or because the problem does not stop at the border (Perrault, 2001). Regional and sub-regional research organizations (e.g., FORAGRO-PROCs, FARA, ASARECA, CORAF/WECARD, APAARI, AARINENA) also provide a stronger voice in the politics of the sub-regional, regional and global research arenas. For individual countries, regionalization is a strategy to enhance their research capacity and influence.

From a global perspective, regionalization can make research more problem oriented or demand driven; improve the chance of research having a positive impact; develop and put in place integrated natural resources management perspectives; and give the technology users a stronger voice (de Janvry and Kassam, 2001, 2004; TAC, 2001). These are benefits from the regional to the global levels and are very similar to what is pursued with in-country regionalization (Janssen and Kissi, 1998); the reverse, from global to regional levels, is also

possible and desirable. In addition, global research programmes may also benefit from the broadening of the agenda that results from a more regionalized approach.

Thus, regionalization looks quite different when viewed from the top (the global perspective) than from the bottom (the national perspective), and the national and global perspectives of regionalization will not necessarily lead to the same priorities. This paper explores the possibility of developing an approach for research priority-setting that would satisfy national, regional and global expectations of regionalization and allow the regional and sub-regional organizations to assume a bigger role. The paper also considers how the CGIAR Centres may support this priority-setting process and how they may use it to define their regional activities. The structure of the paper is as follows:

1. A review of existing regional research initiatives is provided to show the many models in use, with different extents of collaboration, and with different challenges and promises. There are well-established regional initiatives, which offer a wealth of experience. Any effort to strengthen regional research must begin by understanding the existing initiatives.
2. An outline is then given of how regional priorities can strengthen the relevance of agricultural research in a region or sub-region. Regional research priorities should not be restrictive, but rather facilitate the different regional research initiatives. This has consequences for how the priorities should be formulated.
3. This is followed by a description of an approach to establishing regional priorities. The approach begins from the bottom up, with the understanding that the region owns the process and the results of the regional priority-setting work. The approach itself is relatively generic but ideas are included for further methodological development. Suggestions are made on the information requirements to pursue the process and how these may be met.
4. An attempt is then made to demonstrate how the different research organizations that are present or want to be present in a region can use the research priorities to enable their work. Some thought is given to how the CGIAR Centres may participate in the regional agenda while respecting the global nature of the CGIAR System.
5. Finally, the issue of the integration of CGIAR regional and global priorities for international agricultural research is outlined.

DEVELOPMENTS IN REGIONAL AGRICULTURAL RESEARCH ORGANIZATIONS

Regional collaboration has been promoted to deal with problems that cross the boundaries of a single country (Walton, 1994). Frequently, different countries in a region confront the same agricultural problems simply because they share the same climatic and edaphic conditions. Putting together resources for joint research can increase the effectiveness with which the region resolves the problems at hand. The effectiveness of regional initiatives depends on the facility with which common problems and strategies are agreed upon, coordination modalities are defined, and efficient and equitable cost-sharing mechanisms are

found. The costs of regional collaboration have decreased over the past decade due to immense progress in means of communication (telephone, fax, e-mail, Internet, airline services).

Regional modalities bring additional advantages to shared research. Knowledge can be shared and transferred in a more efficient manner; research can start on new topics while avoiding unnecessary costs or risks for each country. Regional mechanisms can also increase political influence at the world level and be a step toward the integration of different countries' scientific systems, as is the case of the European Union. Donors are interested in regional mechanisms as several countries can be financed through one initiative (Gijsbers and Contant, 1996).

Eponou (1998) distinguishes different types of regional collaboration. These are summarized, with certain additions, in Table 1.

Table 1: Types of regional collaboration in agriculture

Type of collaboration	Activities	Benefits (2)	Risks	Examples
Ecoregional consortia	Multi-disciplinary and multi-institutional projects	Broad participation, focus on specific problems	Weak commitments between partners, lack of identity	CONDESAN, AHI
Regional collaboration organizations	Various programmes shared between partners	Solid programmes, regional presence	Mobilization of partners' resources, coordination costs, political process	PROCI's
Regional institutions	Research programmes	High quality, sustainable programmes	Low regional identification	CATIE, CARDI, INSAH
Regional associations	Exchange of experiences and results	Mutual support and problem recognition	Political influence, lack of research	ASARECA, AARINENA, CORAF, APAARI
Regional for a	Exchange of perspectives	Open character, contacts	Lack of action and commitment	FORAGRO, FARA
Regional networks	Precise programme between partners	Solid programme and directed exchange	Distance from national problems, low political support	INTSORMIL, PROFRIJOL, PRECODEPA
Professional associations	Disciplinary exchange	Disciplinary contacts	Lack of sustainability	PCCMCA

Source: Eponou (1998), with some additions.

Within the types of mechanisms laid out in Table 1, the intensity and size of collaboration tend to decrease along the vertical axis: consortia require much management and coordination in order to function, whereas professional associations have less need for management.

Some of the trends or facts observed in regional cooperation in the 1990s are the following:

- (a) **Consolidation:** The multitude of small-scale regional collaboration initiatives is being consolidated under more general organizations. For example, the Association for

Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) is being organized as an institution that integrates different technical research networks.

- (b) **Broadening partnerships:** Traditionally, networks and other collaboration initiatives were formed by homogeneous organizations (NARS-type) and partner homogeneity was considered to be an important factor in their success (Plucknett, Smith and Ozgediz, 1990). There is now a tendency to recognize the importance of a broader collaborative base even when this complicates the work. Two relatively new forms of collaboration are illustrative: 1) consortia, which bring together quite diverse institutional partners around a common problem and which attempt to jointly define research and development strategies; 2) fora, which imply less commitment in terms of actions, but which provide a means to permit exchange between many participants and which can lead to collaborative actions between groups represented in a particular forum.
- (c) A less clear trend can be observed toward a focus on **shared problems** rather than a shared interest or discipline. Consortia provide a clear example of regional cooperation mechanisms with a problem (e.g., agroecological or thematic) focus. The advantage of a problem-oriented focus is that it permits the definition of partners' objectives, goals, and responsibilities, which in turn permits better management and evaluation of collaborative effort. The disadvantage is that the reason for collaboration ends the moment that the problem no longer requires attention.
- (d) The difficulty of working on topics that affect the **relative competitiveness** of the partners. Research is increasingly seen as an instrument to achieve competitive advantage, and partners therefore prefer not to share results that affect this advantage vis-à-vis potential competitors. A country exporting a product to other countries in the same region will probably not want to collaborate on that product. Likewise, a country which dominates the world market probably would not want to share its results with neighbours who are possible market competitors. On the other hand, this difficulty does not arise when countries within a region together satisfy a small part of international market demand for a certain product. This suggests, therefore, that it is important to emphasize action related to problems or topics that do not affect intra-regional competitiveness, but rather focus on partner countries' internal conditions (for example, natural or genetic resources), or work on pre-competitive topics (basic research). (3) Regional research has a greater chance of success if the results permit each partner to benefit without other partners being hurt. (4)

Most regional collaboration initiatives depend largely on non-national sources for funds, often provided by donors, and there has been little progress in internalizing this financing (Perrault, 2001). (5) Efforts to hand over financial responsibilities to the partners have not been very successful, with the exception of some cases such as PROCISUR. Willingness to pay the costs of regional collaboration is only evident where there is a political concern with regional integration. This is the case with the European Community's regional research collaboration, which is seen primarily as an instrument to create sustainable links between scientific communities in the countries of the European Union.

In the final analysis, the strength of regional collaboration initiatives is defined largely by the capacity, relevance and strategies of the partners. If partners lose relevance within their national environments, regional initiatives also lose their relevance. In addition, if within their national contexts partners have open strategies based on partnerships where they are exposed to

other perspectives or experiences, the regional initiative would likely come under pressure to act in a similar manner. In a world characterized by open alliances, three strategies are available that permit the coverage of regional research mechanisms to be extended.

- (a) Seek a gradual increase in the number of partners at a pace that conserves the identity and objectives of the regional organization. The question is whether non-traditional partners are interested in being linked with an organization based on the concerns of others, and whether they feel the need for, or see a benefit in, establishing this link. With respect to traditional partners, the question is whether they perceive sufficient benefit in being affiliated with a regional organization to compensate for the loss of individual influence.
- (b) Seek alliances with other regional organizations that represent non-traditional partners in order to broach topics of common interest. The advantage of this modality is that the regional organization's identity is maintained. The disadvantage is that the definition of actions or concrete projects is complicated since these should be subject to two levels of negotiation: between and within regional organizations. This strategy's viability increases if the non-traditional partners have a high degree of organization. For example, the International Food and Agribusiness Management Association (IFAMA) has regional chapters that could be approached by regional agricultural research organizations to identify topics of common interest.
- (c) Broaden the partnership base by integrating other types of organizations and emphasizing a problem-oriented focus (a development toward the 'consortium' model). The advantage of this strategy is that it permits institutional collaboration between different types of partners within the regional organization to be articulated around a problem. The disadvantage is that the regional organization loses its identification with a certain type of partner. The modality is more viable if there is a strong sponsor for the consortium and if the degree of regional organization between non-traditional partners is low.

Whereas most regional collaboration initiatives are pursuing at least one but often more strategies to increase their coverage, obviously big differences remain. It should also be clear that in many regions there is more than one initiative on regional collaboration. Setting regional priorities must start with recognizing the diversity of the different approaches, and with valuing the role that each of these initiatives has played.

HOW CAN REGIONAL PRIORITIES STRENGTHEN AGRICULTURAL RESEARCH?

Regional priority-setting must lead to an outcome that facilitates relevant regional research. Before elaborating a regional priority-setting process, it is useful to define in more detail the expected outcome of such a process. In this way, expectations of achievements with regional priorities are more realistic.

Regional research versus national or global research

Regional research priorities are not the sum of the national priorities, nor the derivative of global priorities. Regional research priorities indicate the areas of work best handled at the

regional level. This implies that regional priorities must respond to concerns that are felt in several countries, and that the outcomes of regional research must be of use and must be accessible to several countries. An implication is that regional research priorities do not need to be comprehensive but rather complement national research.

Regional priorities and funding

In the early days of priority-setting methods, the interest in these methods was principally to guide resource allocation among alternative research activities. Priority-setting was meant to lead to funding decisions. In the context of regional priority-setting it is not clear which funding will be allocated. Regional research is normally funded from many sources, e.g., national research organizations, universities, international organizations, bilateral donors. There is no single pot of money to be divided, and one cannot expect the different funding sources to release their discretionary power for the benefit of the region.

Linked with the previous point, the legitimacy of any organization to direct regional research in a very focused manner and prevent any other regional research initiative is limited. Most regional research organizations represent a small group of national research organizations, and at the most they can take decisions for that group (e.g., the PROCIs representing the NAROs). When the regional body represents more organizations, this is normally achieved by increasing the voluntary nature of the participation.

In summary, in most cases there are limited funds and authority to enforce any set of priorities. Rather, the purpose of regional priorities is to increase the attractiveness of funding regional research from the national budgets of member nations and from private interests in the region, (6) and to help convince potential partners to team up, and to further develop the network of organizations collaborating on projects of regional relevance.(7)

The nature of regional priorities

A concern with decentralized priority-setting is that the outcomes for the different sub-regions will vary greatly in detail and dimension (commodities, disciplines, geographical areas, resources, development problems). If this is the case, priorities of different sub-regions will be difficult to compare, and it will be difficult for the sub-regions to identify shared concerns or interest. Regional research is meant to contribute to rural and national development, and to overcoming development problems. Regional research priorities are therefore best expressed in terms of the development problems that need to be addressed.

Even so, regional research priorities may be defined in three ways:

1. As the **most urgent problems** that must be resolved or the **most promising opportunities** that may be pursued to support the (short or longer term) development of the agricultural sector: this is a very open approach that does not look at how the priorities must be addressed.

2. As the **agenda of most important research strategies**, which will contribute to regional development: in comparison with the “problem priorities,” a prioritized agenda is one step further. The most feasible research approaches to address the priority problems have now been defined.
3. As a **series of prioritized research projects**: this is again one step further than an agenda. Now the resource requirements to implement the most feasible research strategies have been estimated, the actors to implement the strategy have been defined, and the research strategy has been converted into concrete projects, with outputs, milestones, etc. Most of the discussion on how to address the problem has been closed in this case.

Defining regional research priorities in terms of prioritized research projects makes sense if it is known how much resources are available for regional research, and if these resources can be reasonably controlled. For most regions or sub-regions this is not the case: a large share of the regional research projects is funded with special project money. The range of organizations interested in participating in regional research is normally not closed, and as was argued in the previous section, most regional initiatives are constantly exploring venues to increase the number of collaborators.

At the same time, expressing priorities in terms of problems only, does not provide much guidance for the development of regional research initiatives: for example, in Latin America, lack of competitiveness has frequently been mentioned as an outstanding regional problem. Whether this problem should be addressed through research focusing on yield increases or through research on product quality or commodity chain development is not clear. If only problems are defined, almost every research project may fit in.

Regional priorities are best expressed as an agenda that indicates the most important research strategies to overcome the key agricultural development challenges identified in the region, and more broadly to resolve poverty and environmental degradation in the region. In this way research priorities express the demands for new knowledge that the region is facing in order to pursue sustainable and equitable agricultural development. In other words, agricultural research can address more than agricultural development. It can help improve nutrition, achieve sustainability, increase employment, improve balance of payments position, etc.

A regional agenda must allow many partners to buy in along the research-to-development continuum, and to form the working arrangements most suited to solve the problems or to grasp the opportunities that were identified. Within such a regional agenda, consortia, project alliances, networks and individual organizations may all find their place.

Regional priorities must be forward looking, truly contributing to development

A concern that is frequently raised around the reorganization attempts of the CGIAR and around the performance of national agricultural research organizations is that in the end, they always try to justify what they have been doing in the past. Setting priorities that are aligned with the changing conditions and objectives for agricultural development is difficult at the national level, or at the level of one organization. It is even more difficult at the regional level where different interests must be recognized and reconciled. To be on the safe side, regional priorities

may quickly become the smallest common denominator of what is occurring in the countries. The established national researchers will often well be able to accommodate themselves in such national priorities, but a traditional regional research agenda, based on the priorities defined in the years before at the national level, will not draw the interest of the public in general, the development community or the sources of funding.

A regional research agenda that leads the way, responding to the newly arising societal concerns, piloting new strategies, and exploring new problems will have higher funding appeal, thereby enabling the partners to mobilize new resources. Such a regional research strategy may also help to strengthen new capacities in the contributing countries, thereby facilitating institutional development and change. The new emphasis of PROCISUR on commodity chains is an example: a clearly defined response to competitiveness concerns, which aims to go beyond the existing competence and research agendas of its partners (Bocchetto, 2001).

From this condition, two important consequences for the priority-setting process follow. The first one is that it is important to involve people from outside agricultural research. In addition to the agricultural research community itself, the following groups may be of special relevance (see also Sperling and Ashby, 2001):

1. **The science community at large.** This group ensures that regional research is receptive to new scientific trends and opportunities. It will ensure that new research strategies will be pursued.
2. **Consumers' interests groups.** (8) These are the groups deriving most of the indirect benefit from technological change, and they are politically some of the most powerful potential supporters of investment in agricultural research.
3. **The rural development community.** This group is confronted on a day-to-day basis with the constraints to development and poverty alleviation, and may bring fresh perspectives to the key problems that must be addressed.
4. **The farming community.** The farming community is the key reference group for most agricultural research. Farmers understand the problems in agriculture and often have clear ideas about the feasibility of alternative research strategies. They are one of the most important groups to represent the private sector.
5. **The agro-industry.** In the process of agricultural development, farmers are increasingly integrated through forward and backward linkages with the agro-industry. This concerns inputs, but even more the transformation and marketing of the outputs. They are the other important group to represent the private sector.
6. **Representatives of the "public opinion".** Agricultural research must relate to the problems as perceived in the public opinion. A science journalist may contribute to identifying those concerns that are overlooked by experienced researchers.
7. **National, bilateral, and multi-lateral investment agencies.** Agricultural research must be aligned with financial resource flows and agricultural investments so that research is linked to extension and development efforts in the regions.

The second condition is that the priority-setting process must be exploratory and creative, and not only analytical in a narrow sense. Priority-setting then obtains strong strategic

characteristics. Where the strategic issues concern many organizations, methodologies such as scenario development (Johnson and Paez, 2001; Vieira, 1999) and technology foresighting (Rutten, 2001; Martin, 1995) become important. These methodologies help create a vision of how agriculture is developing and what research can contribute to it.

Data and data analysis should not drive the process, but support it. The database to illustrate traditional concerns is always better than for new concerns. If the priority-setting exercise starts with a quantitative analysis of “what research can do for the region”, the outcome is often that more traditional research is needed, and that the potential to pilot new approaches is foregone. In a first stage the database to support regional priority-setting must allow to describe the current situation of the agricultural sector and the nature, extent and distribution of the development challenges that it faces. This will be further developed in the next section. The problem and research strategy definition should be *supported* by analysis, not *driven* by it.

Regional priorities must be available and of benefit to all interested parties (or the priorities need represent a compromise that is acceptable to all)

The set of organizations that may participate in regional research is never closed. There is no way of enforcing regional research priorities, because (sub-) regional sovereignty is normally weak. In most cases the research priorities cannot be immediately converted in funded and approved projects. In this situation the biggest impact of the established regional priorities is that they are an endorsement to new research initiatives. At the same time, certain funding sources (but it is not expected that all will do so) may use the established priorities to guide their decisions.

It is then important that the regional research priorities are made available in very clear and unambiguous wording to all interested parties (e.g., a website), and that the existence of these priorities is widely communicated. Also research organizations that are developing projects in response to the regional priorities must be allowed to use the regional priority statements in their proposals.

STRUCTURING REGIONAL PRIORITY-SETTING

Before initiating the process, a planning step may be required (step 0). After the planning step, the bottom-up regional priority-setting process (9) may be built up as follows:

1. Consultation with stakeholders and assessment of the regional issues;
2. The generation of ideas for regional research (Mateo, 2001).
3. Prioritizing the ideas for regional research.
4. Elaborating the selected ideas into a research agenda.
5. Feedback and validation.

After the regional agenda has been set and validated, a more decentralized step 6 follows: how to translate the regional agenda in research projects for the different partners. Steps zero to five will be treated in this section. Step 6 is the subject of the next section.

Step 0: Confirming commitment to regional priority-setting, establishing a task force and developing a work plan

Before embarking on a regional priority-setting exercise, it must be clear that there is sufficient commitment from partners within the region to be involved. Often that commitment is evident, or it is expressed in the existence of a regional research organization, and in such cases it may not appear very important to confirm the commitment. Nevertheless, if new partners are brought in, their commitment should be established, and the willingness of the traditional partners to work with the new ones must be confirmed.

It is useful to establish a task force to lead the regional priority exercise. Regional priority-setting is most effectively being led by a (sub) regional organization (APAARI, ASARECA, the PROCIs) possibly with support from the national organizations.

In developing the work plan two issues require special attention: How much time is available to develop the regional priorities? How much money is available to support the process? The level of depth and detail that may be achieved greatly depends on time and money, and it is useless to be over ambitious.

Step 1: Consultation with stakeholders and assessment of the regional issues

In regional research many different perspectives must be combined: from different countries and from different perspectives within these countries. There must be a shared understanding of the problems that different countries are facing. As a first step, it is useful to share agricultural, rural, and scientific development objectives, and clarify the key problems of the different countries. For this purpose, a comprehensive overview of the region, its development objectives, and its research demands must be developed. The regional review will normally be based on secondary information.

Depending on time and resources, two roads may be followed: Reviews may be commissioned from the different countries and afterwards synthesized in a summary document. In this case it is essential that the same framework be used for the national reviews. Alternatively a regional review may be developed at once, in consultation with the different countries. In writing the (national or regional) reviews it is essential to start from a development perspective and to consult with the groups that were mentioned in the previous section.

The regional review must ensure that research is integrated afterwards with other development activities. Box 1 provides an overview of some frequently mentioned development objectives, and suggests indicators to describe the status of the region. The regional review may show, for example, that countries want to make major efforts to develop or improve irrigation systems, or that the road infrastructure is being upgraded, thereby creating opportunities for more marketable commodities. The review may provide a wider context for analysis of specific problems to be identified later. For example, it may identify drought or land tenure systems as

key constraints to agricultural development, or make it clear that diversification and adding value are key strategies for agriculture in several of the countries.

The review also provides institutional information. It may, for example, highlight the impact of legislation on market development or land ownership. Or it may define constraints in the credit system. Or it may analyze developments in the institutional setting, identifying possible collaborators for agricultural research.

Most information needed for a regional review will be known in advance. The purpose of the review is to make the information available in a condensed form and to fill in any remaining gaps. It is a sure way to ensure that opportunities aren't overlooked, and it provides the ground for proposing and checking ideas for regional priorities.

The CGIAR Centres can usefully contribute to the regional review by making their (geographically referenced) databases available to support priority-setting. This is done in the most straightforward manner if a CGIAR staff member is associated with the taskforce or the individual that prepares the regional review.

If there are separate reviews commissioned for the different countries it is useful that one member of the task force develops a synthesis document, that emphasizes the common concerns among the countries. At this stage it is best to think in terms of development concerns and problems and not yet in terms of research strategies

Step 2: Generating ideas on possible regional research priorities

After the review has been concluded and the information is made available to the group participating in the regional priority-setting exercise, the most critical step in the process takes place: the generation of the set of possible regional research priorities. This step is so critical because the priorities in the end only make sense if they are selected from the most relevant topics.

Box 1: Development Objectives

Since the regional review is heavily focused on development objectives, it may be useful to spell out what type of objectives are often found, and how they may relate with research. The following checklist of development objectives and of key indicators to describe them, may then be helpful (see also Boughton *et al.* 1995):

- **Improving rural incomes.** Such an objective is often translated into strategies such as agricultural intensification, diversification, enhanced post-harvest processing, or market liberalization.
Indicators: Urban and rural income/year; structure of employment; main agricultural activities; main agro-industrial activities; share of agriculture and agro-industry in regional income (by smallest possible unit of analysis).
- **Contributing to balance of payments and international competitiveness.** This may be expressed in the form of strategies to focus extension services, credit facilities, or to streamline and coordinate the commodity chains. Strategies to improve product quality may also be included. Privatization of public services and market liberalization also contribute to this objective.
Indicators: Annual value of main agricultural exports; domestic versus international price trends for the main agricultural products; domestic and international input prices (by country).
- **Improving food security.** This often implies strategies to improve potential yield levels of staple foods, to reduce production losses in years with poor production conditions, to develop better storage capacity, or to improve sales opportunities for a possible marketable surplus. In regions with a land surplus, developing the frontier may also be identified as a regional food security objective.
Indicators: food balance sheets; reported food deficiencies; variability in agricultural output over the last years; information on seasonal food shortages and food availability to vulnerable groups; area and yield trends of staple foods (both crops and livestock); post-harvest losses; land availability in general and per farm (by smallest possible unit of analysis).
- **Improving living conditions of the poor.** By focusing development projects or infrastructure development on regions with many poor people, the equity objective can be pursued. The equity objective may also lead to employment programmes (such as Food for Work), in or outside agriculture.
Indicators: share of population below the poverty line, by sex and age; rural employment situation; seasonal and permanent migration trends (by smallest possible unit of analysis); agricultural versus non-agricultural incomes; child mortality and average life expectation; share of population with finished primary education).
- **Managing natural resources in a sustainable manner.** This may translate into reforestation projects, anti-erosion legislation and enforcement, watershed management or water efficiency measures.
Indicators: main sustainability problems; land use; water availability and water use; deforestation trends; soil degradation trends; non-agricultural use of natural resources (by smallest possible unit of analysis)
- **Developing scientific capacity.** This may translate into the development of a science council, investments in advanced research laboratories, or educational grant programmes. Development of scientific capacity is often focused on the frontier fields of science such as biotechnology, genomics or information and communications technology (ICT) and its applications. Indicators: Inventory of agricultural research institutions; Agricultural research spending in total and a share of agricultural gross domestic product; number of agricultural researchers; spending per scientist; spending trends in new fields of research (by country).

The generation of possible research priorities can take place in a number of different ways. The first method is to collect ideas for regional priorities from a wide consultation with stakeholders in the different countries. This may be done by questionnaires, e-mail, through national meetings, or through an electronic conference. The second approach is through a brainstorming session in a regional workshop, in which everybody shares their ideas on what should be the priorities and why. For both the first and the second method, the individual

outcomes must be clustered. The clustering is essentially an intuitive process. A problem that frequently occurs is that the individual answers have very different degrees of detail. For example, one person may suggest “competitiveness” and another person may suggest “rust disease in climbing beans”.

The third approach is to use a constraints analysis in a workshop (Kissi, 2001). In this approach the regional review and the knowledge of the participants is combined to define the research priorities. Similar to a brainstorming session, all participants are asked to write a statement of what they consider to be the central constraint or problem facing the region's sustainable agricultural development. The statements are then compared and synthesized into one central constraint. Here are three examples:

- limited future capacity to generate income with the existing natural resource base;
- the absence of sustainable and profitable farming systems;
- the low-income levels among agricultural producers.

The participants' initial statements are used to structure the top branches of the constraints tree. For example, for “limited future capacity to generate income with the existing natural resource base”, the following main constraints could be identified: “inefficient management of natural resources, specially water”, and “limited competitiveness of the traditional agricultural sector”, and “lack of diversification”. Working groups can now be formed, each developing further one of the top branches for one more level, and then describing in more detail the identified constraints, using the regional review and other documents. If the constraint analysis restricts itself to three levels, between 6 and 15 constraints may have been defined.

For each of the constraints identified, there are normally several research responses possible. For example “limited competitiveness” may be addressed by “raising yield levels”, by “developing improved market information systems” or by “improving the commodity chains”. After the constraints are known it is important that the most important strategy to overcome the constraint is identified. This strategy will then be the basis for the research agenda. If “improving the commodity chain” were selected as the best strategy to raise competitiveness, all research activities that contribute to improved commodity chains would be part of the agenda. Such types of priorities are quite similar to the programmatic fields identified by the European Commission in its Framework Programmes.

Ideally at this stage, a small number of research strategies stand out. The number should be small for two reasons:

1. If there are many issues that come out of the analysis, the potential and the motivation to rally round these issues will be limited. Should there be no major rallying around the issues, the resulting regional priorities will not lead to more focused and relevant research, they will only have contributed to increased regional confusion, and will serve the status quo.
2. If there is a need to formally prioritize among the ideas that have been generated, then the quality of priority-setting is normally improved if the number of alternatives that must be studied is small. With large numbers of alternatives, priority-setting becomes mechanical and loses its depth.

Step 3: Prioritizing the ideas for regional research

A regional agenda will only be effective if it is well focused. It is not clear beforehand if this means that the regional agenda should comprise 2 or 6 priority areas, but it is hard to see how a regional agenda with many areas will be able to develop any weight. Many methodologies are available for setting priorities. Some methods try to estimate the *ex-ante* returns to alternative agricultural research activities, by means of economic surplus or other cost-benefit methodologies. Economic surplus methodologies (Alston, Pardey and Norton, 1995) are precise and quantitative, but hard to understand for non-economists. They are also more suitable for evaluating productivity-oriented commodity research than for evaluating natural resources management (NRM) research and policy research. Janssen and Kissi (1997) develop a cost-benefit approach to priority-setting that requires less data and allows NRM, policy, and commodity research to be compared. Nevertheless, both methods probably require more data than would be available for the broadly defined research fields that come out of Step 2, and neither method leaves much room for negotiation and discussion.

Scoring methods are probably more suitable to structure the decision process. The development objectives that have been identified in Step 1 can be used as criteria for evaluating the proposed research fields. The question then becomes how the proposed research fields contribute to achieving the development objectives. This question can be made more precise by defining indicators that measure the possible impact on the development objectives. For example, for the objective “Improving the living conditions of the poor” the following criteria can be selected: “share of the poor people in the region that could be affected by the research results in this area”, and “effects on employment creation of research results in this area”. Through the indicators the evaluation becomes more concrete. The indicators can often be derived from the original development policies (see also Box 1). In the policies, measurable targets on specific indicators may have been defined.

Two types of scoring methods may be considered. There are the straightforward scoring methods in which scores are given on the different criteria of 1 to 10 and afterwards combined in a final weighted assessment. Alternatively one may consider the Analytic Hierarchy Process (AHP), where scores are reached through a process of pair wise comparison between the alternatives (Box 2). An advantage of AHP is the use of pair-wise comparisons to determine the relative importance of the decision criteria. These weights may vary considerably, particularly in regional priority-setting and thus a systematic and rigorous procedure to determine them might be desirable.

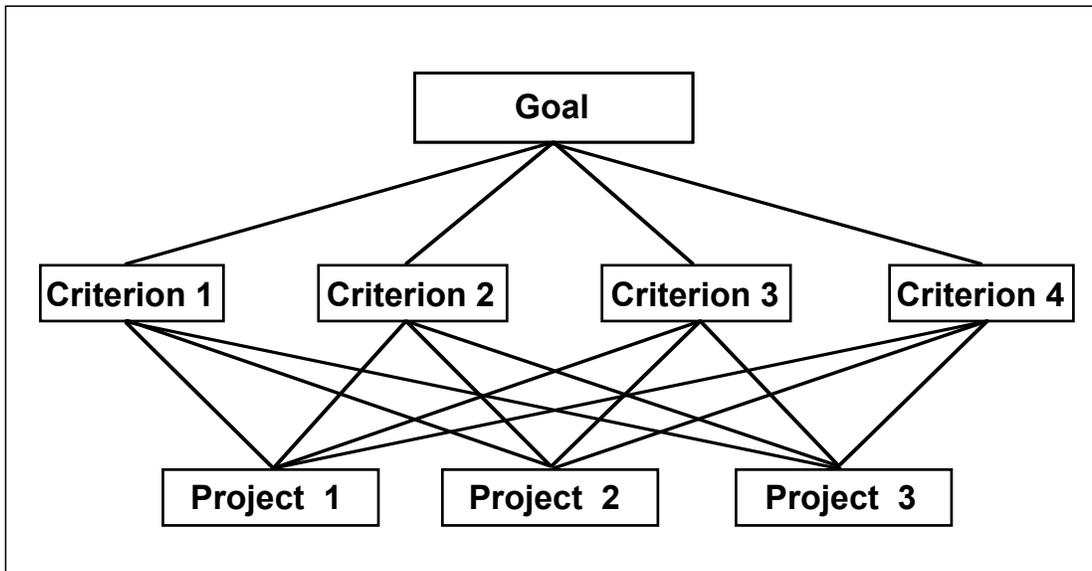
Once the priority-setting exercise has been undertaken, the results should be amply discussed and negotiated. Most priority-setting approaches do not deal well with interdependencies between the alternatives, be they technical or political. In discussions following the application of a formal priority-setting approach, the concerns that cannot be treated well in the methodology must be included. There is often a change in the final outcome thus highlighting the importance of performing sensitivity analysis for the breakdown and discussion of the priority-setting outcome.

By all means, the priorities must count with intuitive appeal. If there is not a feeling that the outcomes are realistic and logical, it would be very difficult to convince the outside world to respond to these priorities.

Box 2: Analytic Hierarchy Process

AHP has shown to have great flexibility in modelling decision problems, while still providing a more rigorous approach than the ordinary scoring methods. The rigorous structure of AHP models improves collective thinking, reasoning, and the efficiency of group decision-making (Braunschweig, 2001). Whereas the name Analytic Hierarchy Process sounds quite complex, the actual application is quite simple. Figure 1 presents a basic analytic hierarchy, which is made up of three levels. The top level is the general goal of the exercise as agreed upon by the participants, e.g. “selecting priorities for regional research that contribute most to sustainable development”. The second level consists of decision criteria that are conceived relevant for the achievement of the goal, for example the development objectives that were defined earlier on. The bottom level encompasses the alternatives, i.e., the research strategies that, for example, resulted from the constraint tree analysis. By pair-wise comparison of alternatives with respect to the criteria, and of the criteria with respect to the goal, a consistent decision can be prepared. There is software available to support the process.

Figure 1: The basic structure of a hierarchy



Step 4. Elaborating the selected ideas into a research agenda

Once the priority areas for regional research are defined, they should be elaborated in more detail. At this stage, specialists could be approached to identify the possible research approaches that may be considered in the areas, and to identify possible topics of particular relevance. The specialist may usefully apply the logframe approach to elaborate the research strategy (Baur, 2001). It is especially useful to pursue the first column of the logframe, and to

write down the overall goal; the more concrete purpose; the outputs required to achieve the purpose; and the activities required to achieve the outputs.

At this stage, further background information may be required. A study that evaluates earlier research in the same area, and that indicates the factors that contributed to its success or failure, would be useful. The research review builds an inventory of research progress already achieved for the region and takes note of problems not yet researched. In this way the review paves the way for regional research projects to begin at the most advantageous point by taking account of previous knowledge. In addition, it helps to discourage “new” projects where, in fact, someone has already done the research.

In a similar way, a more detailed and geographically focused analysis of where the priority research areas are most relevant may be made at this stage (Hyman, 2001). Other relevant data sources may be used in identifying possible research approaches and research subjects of particular relevance. If a database were to be developed for this purpose, it would be most useful as an attachment to the elaborated agenda for the priority area.

The elaborated research agenda should also indicate what research is ongoing in the priority research area and by which organizations. This allows everybody to identify more clearly the available niches and topics that require further attention.

It should be clear, however, that the elaboration of the priority research agenda by the specialists is mainly indicative. It suggests the best fields and subjects for research but does not impose them. It is meant to provide support and guidance to all the research organizations that want to buy into the regional agenda. The elaborated agenda should enable the different organizations to play a role in the regional network. It will be the cement of the network.

Step 5: Feedback and validation

In the process to identify and elaborate regional priorities, only a limited number of organizations and people will be present. While more may have been consulted in the course of the process, it is nevertheless important that the outcomes are fed back and validated. This may be done in different ways. The results may be shared by e-mail or website and comments solicited. A meeting among selected stakeholders may be called to validate the outcome.

Feedback and validation is principally with the national stakeholders, since the region obtains its legitimacy from the constituent countries. National policy makers must buy into the outcomes and must be willing to support it, both in spirit and with resources. As far as international stakeholders are concerned, they may usefully provide input on the quality and consistency of the resulting agenda but they are less entitled to challenge the resulting priorities.

The feedback and validation process will most probably not lead to full consensus. If priorities are really sharply defined, some fields of work will not be covered, and certain objectives will not (or not sufficiently) be reached. The regional organization that is leading the exercise must decide if there is sufficient agreement and consensus on the priorities or if there is a need for reconsideration.

Feedback and validation are incorporated here at the end of the process. They may also be incorporated after each of the possible steps, and in most real-life examples, feedback comes in even when it is not formally sought. The more formal feedback is sought, the slower the process becomes and the more likely it is that it would come to a halt. If formal feedback is sought before the process is concluded, it would best be done after step 3.

MAKING THE REGIONAL AGENDA WORK

Once a regional research agenda has been established, the question is how to make it work. This question is addressed in this section on the understanding that there is no unique source of funding to finance the regional programme, and that there is no binding authority to impose the regional agenda.

The regional research agenda must be shared as widely as possible, its implementation must be facilitated and monitored, and it must be periodically updated. Three different groups of research organizations may benefit in their work from the regional agenda: regional, national, and international research organizations. The implementation of the regional agenda is further facilitated if it is accepted by those donor organizations that fund research in the region.

Regional vs sub-regional organizations

An issue that has not been addressed explicitly up to here is the role of the regional organizations (e.g., FORAGRO) as opposed to the sub-regional organizations (e.g., the PROCIs). Sub-regional organizations were principally established because the cohesion and homogeneity within the sub-region was considerably larger than across the sub-regions. Whereas it may be difficult to establish agendas within a sub-region, it will be even more difficult to establish them across sub-regions. For example, between Central America and the Southern Cone of Latin America the development challenges are so different that it will be difficult to develop a joint research agenda. The progress in developing regional research agendas confirms this conclusion: in all cases the sub-regions have been used to define the geographical boundaries of priority-setting.

Once the priorities of different sub-regions in one continent are known, an effort may be made to consolidate them. The question is if this contributes to strengthening the sub-regional research agendas. In the case of Latin America and Africa the executive ability is with the sub-regional organizations and the layer of the continent might add more bureaucracy than strength. In Central and West Asia and North Africa (CWANA) region the situation is mixed: for Central Asia and the Caucasus a separate internationally funded programme is in place, but a sub-regional organization is not yet effective. For the rest of the region, AARINENA is the regional research organization, but it is also working through sub-regions. For Asia and the Pacific, APAARI unites the countries, but, again, concrete initiatives are undertaken by sub-region. For now it appears that the continental approach does not add much to the sub-regional approach, with the exception of an increased political voice.

The role of the (sub-)regional organization

In addition to leading the development of the sub-regional research agenda, the sub-regional organization may assume six roles in making the regional agenda work:

1. It must ensure that the elaborated sub-regional research agenda is available as widely as possible, in order to guarantee that all researchers and research organizations may benefit from it. This is a matter of making presentations, developing a brochure, opening a website, etc. As part of this role, the sub-regional organization also contributes the established priorities to discussions about global research priorities.
2. The sub-regional organization must develop *its own research programme*, with the resources that it directly controls, on the basis of the sub-regional priorities. For this purpose it may select from the research agenda those areas that are most suited to its capacity.
3. The sub-regional organization may develop new projects and projects consortia to implement parts of the sub-regional agenda, drawing in the partners most suited to the task.
4. The sub-regional research organization must facilitate sub-regional projects by other research organizations. It does this by informing the other organizations about the sub-regional agenda, by indicating in what areas new research projects are particularly desired, and by bringing organizations with comparable interests in contact with each other. For this purpose the sub-regional organization may also take the lead in organizing a regional research conference.
5. The sub-regional research organization negotiates the role of the sub-regional agenda in funding decisions of donors. Two outcomes may be foreseen: the donors commit themselves to favoring projects that respond to the regional agenda over projects that do not respond to the regional agenda; the donors commit their funding fully or partially to projects that respond to the regional agenda.
6. The sub-regional organization monitors the progress in the implementation of the regional agenda, possibly by simple means such as a web page that lists the different sub-regional projects.

The role of the sub-regional organization is very central to the implementation of the sub-regional agenda. It is the conviction of the authors that the sub-regional organization will be most effective in mobilizing resources to the region if it works in a network mode, taking a facilitating attitude rather than a directing or controlling position. Like Challenge Programmes for the CGIAR, regional cooperation should provide the opportunity to address some major issues on a sustained basis until the problem has been solved. Regional task forces can be a useful concept for this purpose. A regional approach, with a more reasoned priority-setting process than there is at the national level, could help elevate the game above short run and parochial demands for research results. In doing this, it would also help integrate the contributions of agricultural research with the other dimensions of intervention that need to be mobilized to solve the problem at hand.

The role of the national organizations

National organizations may benefit from regional priorities principally in two ways.

1. They may be guided through the regional priorities to adapt their own priorities. For topics that have appeared on the regional agenda, national organizations may decide to pursue them in collaboration with partners from other countries in the region, rather than on their own.
2. They may decide to increase their contribution or to start contributing to the regional organization and its plan of work.

It is important to keep in mind that most sub-regional organizations discussed in this paper are NARO based. At the same time, in most countries there is agricultural or agriculturally-related research going on in other organizations, such as the universities, the private sector, or industrial research institutes. It cannot be assumed that these organizations have an immediate commitment to comply with the priorities established by the regional organization. They will buy in if they find that it makes their work more relevant, it contributes to funding and it increases their range of useful partners.

The role of the Global organizations, especially the CGIAR Centres

The current CGIAR Vision and Strategy (TAC, 2000) calls for special emphasis to be given to regional research planning, priority-setting and implementation (strategic Plank 4) in order to better link up with development needs and achieve greater impact on poverty. TAC has also recommended a bottom-up approach to establishing regional priorities. The CGIAR can benefit from the regional priority-setting exercises in the following ways:

1. The outcomes of the different regional priority-setting exercises can be integrated in the CGIAR efforts to identify Challenge Programmes. If several sub-regions identify a certain research area as key to future development, the CGIAR could seriously consider such an area for a Challenge Programme. In this way the process of defining Challenge Programmes (to a certain extent a “global priority-setting exercise”) can benefit from input from the bottom.
2. The CGIAR Centres may analyze how their priorities relate with the priorities of the region. This comparison can take the form of a matrix analysis as exemplified in Figure 2.

Figure 2: An example of how to compare regional and CGIAR priorities

	Regional priorities			
	Sub-Region A		Sub-Region B	
	Improved water use efficiency	Biosaline agriculture	Commodity chain improvement	Improved water use efficiency
1. Water management	X			X
2. Market driven agriculture			X	
3. Rural innovation	x		x	x
CGIAR Centre priorities				

A.	X		x	X
B.			x	
C.			x	

Figure 2 represents a simplified world with only two regions, 3 challenge programmes and 3 (anonymous) CGIAR Centres. All subjects are for illustration purposes only. An “X” means that there is large congruence between the regional priorities and the CGIAR challenge programmes or Centre priorities. An “x” means that there is partial congruence. For the situation in Figure 2 it becomes clear that challenge programme 1 (water management) is of very high importance, in both regions. Challenge programme 1 should be actively engaged with the sub-regional organizations to define plans of work for both regions. Challenge programme 2 (market driven agriculture) should try to accommodate its research agenda with the regional priorities on commodity chain improvement of Sub-region B. Challenge programme 3 (rural innovation) may be more effective in sub-region B (two “x”s) than in sub-region A (one “x”). It should carefully consider whether it can adapt its research agenda to support the “improved water use efficiency” and “commodity chain improvement” priorities of sub-region B.

With respect to “Biosaline Agriculture”, there would be no CGIAR activity foreseen that has substantial congruence with this regional objective. The CGIAR would not be involved in the regional research agenda for this subject.

3. *The CGIAR may use the regional priorities to define its strategy for each of the regions.* The matrix may help to identify those priorities that the Centres may rally round. In Figure 2 for sub-region A, Centre A must try to integrate its objectives with those of the regional agenda. It may be a good place for Centre A to establish a regional office. The other two Centres do not have a large role in region A. For region B, the situation is different. All three Centres have something to offer in the field of “commodity chain development”, but only one would have something to contribute to the regional priority on water use efficiency. For region B, the Centres may decide to all rally round the “commodity chain development” area, because this is where the synergies are highest. The CGIAR might then negotiate with the regional organization how to develop a programme to support the implementation of the research agenda on “commodity chain development”. One Centre may then be identified to lead the negotiations.

The choices illustrated under point 2 arise from simply comparing priorities on a one-by-one basis and do not need any further incentives to the ones described earlier for being realized. The choices illustrated under point 3 (a CGIAR-wide strategy for the sub-region) require additional incentives to ensure that everybody does not go their own way. The first incentive should come from the sub-regional organization that should strongly encourage the CGIAR Centres to focus on a limited part of the regional agenda. The second incentive may come from a funding organization that would make available funds for an integrated CGIAR approach to the region.

A central issue in the interaction between the sub-regional priorities and the CGIAR Centres is poverty alleviation through raising real incomes of producers and consumers, and generating rural employment leading to improvement in sustainable food security and resource

management. The sub-regional priorities may or may not have focused strongly on poverty alleviation and sustainable food security, whereas for the CGIAR System it is central to its mission. The CGIAR Centres can take the following steps to reconcile the different perspectives:

1. Within each of the sub-regions, the CGIAR Centres may focus on the sub-regional priority with the closest link to poverty alleviation. It can do this by reviewing in further detail which of the priorities was principally based on the development objective of “improving living conditions of the poor”. Looking back at Figure 2, such an argument could have been used to emphasize “commodity chain improvement” over “improved water efficiency”.
2. The CGIAR Centres may elaborate a research programme *within* the sub-regional priorities. Following the example this means that the CGIAR Centres establish a research programme within “commodity chain improvement” that focuses on linking small farmers from marginal areas to markets, and on creating employment in rural processing in the poor parts of the sub-region.

Given the complexity in real life (at least 14 sub-regions and 16 CGIAR Centres), it will not be easy to accomplish congruency and integration between sub-regions and Centres. The task is certainly not made any easier by the very diffused funding of the different actors. In the end, the successful outcome depends on the goodwill of all parties involved, including the funding agencies. Taking into account that the information required to support these decisions will not become available at the same time, and that the consolidation of the Centres, and the development of the Challenge Programmes are complex processes, it does not appear useful to develop further detail at this stage.

INTEGRATION OF CGIAR REGIONAL AND GLOBAL PRIORITIES

Strategic choices on the research agenda supported by the CGIAR are guided by the following four criteria developed by TAC: contribution to CGIAR goals; production of international public goods; probability of success and cost effectiveness; and alternative sources of supply and comparative advantage.

Through the regional approach to research envisaged in Plank 4 of its new vision and strategy, the CGIAR aims to make its research priorities demand driven and to improve the international division of labor in planning and implementing international public goods research. Those regional priorities that can meet CGIAR strategic criteria will be of potential interest to the CGIAR for inclusion in its agenda.

Because there are large areas of coincidence between these objectives and modus operandi, there is ample scope for collaboration between NARS, regional organizations, and the CGIAR in the definition and implementation of research agendas. Each group of organizations is, however, also pursuing objectives that are not the same. In addition to regional objectives, the CGIAR is pursuing objectives at the global level, which are not simply the aggregation of regional research needs. Within a region, the CGIAR will be pursuing objectives that partly, and potentially largely, coincide with national and regional objectives, but that also partly differ. For example, commodities that pertain to the CGIAR mandate are only a subset of those that the NARS in the region are working on. On the other hand, more explicit poverty reduction

objectives for the CGIAR imply greater concerns for the multidimensionality of poverty. In its regional priority-setting and research implementation, the CGIAR will seek maximum overlap with the objectives and programmes of partners in the region but without compromising on the specific mandates of the NARS, SROs and ROs, and of the CGIAR.

The integration of CGIAR regional and global priorities and making adjustments and balancing at the inter-regional and global level will most likely occur over time as an ongoing process. It will be those regional priorities that are consistent with the CGIAR goals that will be of interest to the CGIAR. (10) This subset of regional priorities would have gone through an appropriate joint evaluation by the CGIAR Centres at the regional level for incorporation into Centres' joint and individual programme portfolios. The further sorting of these priorities at the next level (inter-regional and global) may not be possible as a one-time exercise for all the regions together because each sub-region will have its own planning cycle. This is the so-called Phase II of the bottom-up exercise, the integration of regional priorities into the CGIAR global research agenda, Phase I dealing with the identification of the comprehensive set of regional priorities by the regional stakeholders and the identification of a subset by CGIAR Centres and their NARS partners. This is an area where there is little experience in the CGIAR System. The challenge for the CGIAR is to determine how to maintain a global focus in its agenda while promoting a coordinated regional approach to research planning and implementation.

Currently, the CGIAR is undergoing a bottom-up System level priority-setting exercise in which thematic as well as regional and global consultations involving large numbers of regional and global stakeholders, scientists and visionaries have been employed to enable the CGIAR to integrate into its research agenda the regional priorities that have been identified by the SROs and ROs and their stakeholders. It would appear that it should be possible to establish a process of consultation, both virtual and physical, that could be effective in reviewing and setting research priorities regionally and globally for the CGIAR System. In such a process, it is possible to capture the real needs of the target regions and people while integrating new science to address those needs through international public goods research. However, one lesson which is clear is the fact that priority-setting must be managed as an ongoing exercise and not a periodic one, say every five to seven years. Changes in the external environment, globally and regionally, occur far too rapidly calling for an effective ability to review and adjust System level priorities perhaps biennially, and reflect any changes in the rolling medium term plans.

CONCLUDING REMARKS

This paper outlines an approach to sub-regional and regional priority-setting from the bottom up. It is based on earlier experiences with regional priority-setting and research planning in general. Establishing priorities is by itself not an easy activity, and some of the available methodologies have not contributed to making it easier. The process would be complex enough if it were done for one organization, which can control the resources that it wishes to allocate through the priority-setting exercise.

The process is complicated by the fact that it is not about *allocating* resources but also about *attracting* resources, and by the fact that it is not for one organization but for many, very different organizations. The implicit challenge in regional priority-setting is to arrive at an

outcome that will benefit all participants. In addition, if the outcome is attractive, new organizations may be interested to contribute to the regional agenda. If the outcome is not attractive, a lot of time, credibility, and willingness to collaborate will have been wasted.

One of the largest risks in setting regional priorities is that the level of detail is such that possible regional partners can be excluded. The regional agenda that comes out of the priority-setting exercise must be like a painting made with a large brush, a simple composition in attractive colors. Otherwise it will not draw the attention of research institutes, funding agencies, and development organizations and will not contribute to sustainable and equitable development.

Priority-setting in the CGIAR will become even more of an ongoing process while the bottom-up regional approach to research planning, priority-setting and implementation is established in all regions. Thus, in the first cycle of implementing the CGIAR Plank 4, the strategic planning and medium-term annual evaluation processes of the CGIAR at the System and Centre level would need to integrate regional and global priorities, and translate these into regional and global programme agenda for international agricultural research, on an "as and when possible" basis.

NOTES

1. This article is based on an earlier paper (TAC, 2001) prepared by the authors for discussion by the Technical Advisory Committee (TAC) to the CGIAR at its 81st meeting in September 2001 at CIFOR, Bogor, Indonesia. The views expressed are not necessarily those TAC or its Secretariat, or of FAO. Helpful review comments were provided by Emil Javier, Oumar Niangado, Dana Dalrymple, Thomas Braunschweig, Howard Elliot, Shellemiah Keya and Timothy Kelley.

In preparing this paper extensive use has been made of earlier work done at ISNAR on regionalization, both within and across countries, of earlier work by TAC and GFAR, and of the experiences up to now with regional priority-setting in different parts of the world, especially in Latin America.

2. Benefits arise from sources of advantages elaborated earlier such as economies of scale, division of labour, specialization, exchange of information, etc.
3. One can ask whether this is a sufficient condition. How is the situation for regional markets or for trade between two countries who want to get involved in regional research initiatives? Is the focus on genetic resources the solution given they become more and more tradable goods? Also, how realistic is it to consider basic research in agriculture as "pre-competitive" – at least from a strategic point of view – when the area of application of patent system is continuously extended?
4. It can be argued that this is a rather idealized vision of the real world. Benefits are never equally distributed, and it is rare that there would not be losers and winners from a particular undertaking. Hence, what a regional programme must look for are acceptable

compromises. Big countries will usually gain more than small from the release of public goods. Choice of commodities may leave some countries unaffected. Hence, what we need to look for is a portfolio of research undertakings that creates benefits for all the partners involved. It does not mean that each project will be a win-win for all. There are political economy forces involved in regional research like national research. The choice of priorities will be the resultant of a process of give and take. In practice, compromises need to be found, parts of the portfolio benefiting differentially to different countries, and the heavy weight partners may gain more than the others.

5. There is a significant exception here: it is understood that virtually all of FONTAGRO's funding – which is not large on an annual dividend basis – comes from within the region. Clearly, the question may be raised as to why countries are so slow in realizing the potentially large opportunities for collaborating on a mutually self-serving regional research agenda?
6. This may include national budgets derived from international loans. What is important is that countries be able to make longer term commitments to these contributions for the national partners in the regional research initiative. For this, support to regional research should be line items in national budgets, financed by domestic taxes or international loans. Also, contributions by consortia of private sector interest, from producer organizations to agribusiness firms, should be solicited to support regional research. Contributions to CGIAR research should also be coming from these national and private regional interests. For the CGIAR, a regional commitment should be a mechanism to decrease dependency on international donor contributions.
7. In some sense the regional approach already operates within nations, and in a large country such as India, Brazil, China, the national research agenda would be comparable to regional research priorities aggregated up and monies allocated from a central source to numerous agencies and organizations throughout the country. It would be useful to know how well does that work? Within that model, are there multi-state initiatives that develop from the bottom-up? Or does each simply take the money from the central body and do its own thing?
8. These groups are heterogeneous, with conflictive priorities. Hence, there are not only inter group divergences but also intra group differences. Farmers, for example, differ by degree of commercial orientation, types of farming systems, technological levels, etc. The key issue is how to reconcile the diverging interests of these groups and of the members of the groups. Open regional dialogues about regional priorities are important for this purpose, a point which is discussed in the steps for priority-setting.
9. A bottom-up process should not exclude inputs from the top or from the side to avoid becoming parochial. More broadly-oriented scientist could bring in a lot of ideas about what has been done elsewhere and the scientific potential for further accomplishments – information that may not be known at the local or regional level. They could raise the horizon of thinking.

10. We are nowhere near being able to explicitly and routinely assess on an *ex-ante* basis the international public goods nature of research based on reliable *ex-ante* estimates of potential uptake.

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ACRONYMS

AARINENA	Association of Agricultural Research Institutions in the Near East and North Africa
AHI	African Highland Initiative
AHP	Analytic Hierarchy Process
APAARI	Asia-Pacific Association of Agricultural Research Institutions
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
CARDI	Caribbean Agricultural Research and Development Institute
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CGIAR	Consultative Group on International Agricultural Research
CIFOR	Center for International Forestry Research
CONDESAN	Consortio para el Desarrollo Sostenible de Ecoregión Andina
CORAF/WECARD	Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles/ West and Central African Council for Agricultural Research and Development
CWANA	Central and West Asia and North Africa
FAO	Food and Agriculture Organization of the UN
FARA	Forum on Agricultural Research for Africa
FONTAGRO	Fondo Regional de Tecnología Agropecuaria
FORAGRO	Foro Regional de Investigación y Desarrollo Tecnológico Agropecuario
GFAR	Global Forum on Agricultural Research
ICT	Information and Communication Technology
IFAMA	International Food and Agribusiness Management Association
INSAH	Institut du Sahel
INTSORMIL	International Sorghum and Millet Collaborative Research Support Program
NARO	National Agricultural Research Organization
NARS	National Agricultural Research System

NRM	Natural Resources Management
PCCMCA	Programa Cooperativo Centroamericano para el Mejoramiento de Cultivos y Animales
PRECODEPA	Programa Regional Cooperativo de Papa
PROCI	Programa Cooperativo de Investigación Agropecuaria
PROCISUR	Programa Cooperativo para el Desarrollo Tecnológico Agroalimentario y Agroindustrial del Cono Sur
PROFRIJOL	Proyecto Regional para América Central, México y el Caribe
RO	Regional Organization
SRO	Sub-Regional Organization
TAC	CGIAR Technical Advisory Committee