

Global Forum on Agricultural Research

**Global Forum on Agricultural Research:
Plan of Action 1998-2000**

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Introduction

The **Declaration and Plan of Action for Global Partnership in Agricultural Research** were adopted on October 31, 1996, at a *Global Forum on Agricultural Research* held as part of International Centers Week, the main annual meeting of the Consultative Group on International Agricultural Research (CGIAR). The Declaration and Plan of Action are included in Annex I.

Mr. Fawzi Al-Sultan, President of the International Fund for Agricultural Development (IFAD), presided at the Global Forum, at which the various components in the global agricultural research system joined together for the first time to explore the needs and opportunities for agricultural research, the scope for collaboration, and practical measures to strengthen partnerships, in the interest of promoting sustainable agricultural development for food security.

The *Declaration* and the *Plan of Action* were tabled at the World Food Summit held in Rome, Italy, on November 13-17, 1996. The Global Forum on Agricultural Research is one of the strategies through which we can attain the objectives and goals that were adopted at the Food Summit.

The origins of the Global Forum lie in the recent efforts of the CGIAR to broaden its partnerships with national agricultural research systems (NARS), regional organizations, advanced research institutions, non-governmental organizations, universities and the private sector, among others, and to increase the participation of NARS in CGIAR decision-making. This initiative forms part of the Renewal Process of the international agricultural research system that was launched by Ismail Serageldin, Chairman of the CGIAR.

It should also be pointed out that the need for collaboration and for the development of research partnerships and strategic alliances was also being actively sought by research institutions and firms in both developed and developing countries, as a way of responding to the increasing challenges and opportunities they are facing in the knowledge-based and globalized world that characterizes the present context. This is a bottom-up process that comes from initiatives taken by the national agricultural research systems (NARS), aimed at strengthening cooperation mechanisms among them and at improving their effectiveness and their development impact. These two trends reinforce each other, and are at the basis of the emergence of the Global Forum on Agricultural Research (GFAR).

In order to facilitate the implementation of the Plan of Action, it was decided that the Global Forum **will be convened every three years** to exchange information in order to

identify common challenges, confirm principles of collaboration, and propose alternative means of implementing collaborative programmes and facilitate research partnerships. In between, the Global Forum will function through the collaborative programmes it promotes, and through making intensive use of e-mail, the INTERNET and electronic research networks, **taking full advantage of the opportunities created by the new information and communication technologies.** Thus the Global Forum is based on research partnerships and transnational electronic networks, that lead to the emergence of new institutional models for research and to dynamic *learning processes* (what some observers call “*networks of learning*”). Here the Regional Fora and the Sub-regional cooperation programmes will play a key role, as one of the main operational units of the Global Forum.

This document describes the approach and the main concepts that are at the basis of the GFAR, analyzing the increasingly important role that is being played by research partnerships, research networks and strategic alliances in the *emerging new structure of a global research system*. It also describes the consultation process that was carried out over the last two years, involving all the stakeholders related to agricultural research and sustainable development: national agricultural research systems (NARS), international agricultural research centres (IARCs), advanced research institutes (ARIs), non-governmental organizations (NGOs), the private sector and Farmers’ Organizations. The establishment of the Global Forum on Agricultural Research was the result of this consultation process.

But the main purpose of this document is to present the **Plan of Action 1998-2000** that has been adopted for the initial phase of development and implementation of the GFAR. In doing so, it describes the mission of the Global Forum, the objectives it pursues, the principles or criteria that will orient its activities, and the main Lines of Action or thrusts around which specific programmes and actions will be organized and carried out. This Plan of Action provides the framework within which the first initiatives and activities will be designed and initiated in the first three years of operation. This Plan of Action will be continuously adjusted and adapted, in order to respond to the needs and requirements of its stakeholders, and in order to take advantage of the opportunities that will be generated by this process in the near future. It should thus be interpreted as a flexible and dynamic framework, which is still in the process of construction.

The last chapter of this document analyzes some of the organizational aspects of the Global Forum. Special emphasis is placed on the importance of the **Regional/Sub-regional Fora** (constituted by NARS), and of the **other stakeholders** of the Global Forum, as the main operational units of the GFAR. It is through these institutions and actors that the various activities envisaged in this Plan of Action will be carried out. **They constitute the Global Forum on Agricultural Research.**

Part I
Nature of the Global Forum on Agricultural
Research

1. Research Partnerships, Strategic Alliances, and the Global Forum on Agricultural Research

The **Global Forum on Agricultural Research (GFAR)** was established on October 31, 1996, as a global framework or collective endeavor that facilitates exchange of information, access to knowledge, cooperation and research partnerships among the various stakeholders related to agricultural research and sustainable development. In doing so, it seeks to strengthen national agricultural research systems (NARS) and regional and sub-regional fora, and to encourage the identification and development of collaborative research projects in areas of common interest. The Global Forum emerged from the conviction that, in order to respond to the increasing challenges and research needs we presently face, as well as take advantage of the new opportunities that are being generated by advances in science, it is necessary to promote the development of a *Global System for Agricultural Research*, based on cost-effective partnerships and strategic alliances among the various institutional actors involved in agricultural research, aimed at three major objectives:

- reducing poverty
- assuring food security
- assuring the conservation and management of biodiversity and the natural resource base.

There are three fundamental beliefs that are at the origin of the Global Forum. First is a **science-base vision of the future and of the role knowledge plays in contemporary societies**. Science, especially the new strategic areas of research and of technological development in the biological sciences, can make a major contribution to overcoming poverty and hunger, increasing food availability, and halting the serious deterioration of the natural resource base that we are facing. Knowledge and science are not only instrumental in achieving these objectives. They permeate the process of social change and of development in the present context of **knowledge societies** and **knowledge economies**.

Secondly, recent trends clearly point out that knowledge generation and utilization is increasingly based on **transnational research systems and networks, that build upon research partnerships and strategic alliances** among the key stakeholders and actors involved in this process. Innovation is no longer the result of the endeavors of a single institution or firm; it is the product of iterative processes that lead to *“Networks of Learning”* constituted by various actors that play complementary roles in this process. Besides the participation of NARS, IARCs, and ARIs in the process of research and technological development, this also requires the active involvement of the private sector,

of NGOs and of end-users in such endeavors.¹ It also requires developing a capacity for “*Knowledge-Brokerage*”, which is an important element or step in the *appropriation of knowledge* by policy-makers or end-users, and thus in innovation.²

Thirdly, it is of critical importance to avoid the dangers of potential inequities between and within countries, that could emerge from increasing technology gaps and exclusion forces based on the capacity to access and use technology, and thus to harness the power of science. If this issue is not addressed, we may end up with growing imbalances that will lead to increasing poverty and environmental deterioration in many parts of the world, despite the increasing capacity and opportunities to cope with these problems that modern science is generating.

These changes are not only being confronted in the agricultural sector. These trends are influencing and reshaping what we can call *Global Science*, in many areas or sectors of knowledge and production. Global science plays an increasingly important role in the present context of transnationalized Knowledge Societies that characterizes the end of this century. But global science is no longer generated only by International Research Centres. It is increasingly based on the synergies and complementarities that emerge between research centres in many locations and institutional sectors, that interact with each other through research networks and research partnerships. Information and communication technology (ICT) is facilitating the emergence and consolidation of such networks.³ Because of the quality of their work, their research infrastructure, and their network of contacts, International Research Centres can play a very important role in providing support, and in certain cases a focal point, to such networks.

A recent international workshop organized by the International Institute for Applied Systems Analysis (IIASA) of Vienna on the topic of “**The Global Science System in Transition**” (Laxenburg, Austria, May 22-25, 1997) analyzed four main opportunities and challenges these trends are generating: (a) exploiting synergies between science and information and communication technology (ICT) development; (b) opportunities and

¹ In this report we will use the following names: NARS (national agricultural research systems), IARCs (international agricultural research centres), and ARIs (advanced research institutes in universities or centres of excellence around the world).

² For a discussion on the concept of *knowledge-brokerage*, and the role it plays in promoting or facilitating the *use of knowledge, learning processes and innovation*, see IDRC/IFIAS: *Strengthening Innovation Systems: A Multi-Partner Policy Development Program on Knowledge-Brokerage*; Ottawa, IDRC, July 1997.

³ For an analysis of the role of information and communication technologies in building innovative “*knowledge societies*”, see the recent report produced by the United Nations Commission on Science and Technology for Development: *Knowledge Societies: Information Technology for Sustainable Development*; Geneva, UNCSTD/UNCTAD, September 1997.

challenges for international science cooperation under conditions of fiscal stringency; (c) access conditions and the future of “open science”; and (d) identifying and coping with hazards of closer integration.⁴ Another interesting analysis of the factors that are shaping the changing nature and orientation of global science, and its role in the contemporary world, was recently carried out by the New York Academy of Sciences and the Rockefeller Foundation, with similar conclusions.⁵ A recent publication of ISNAR presents a very interesting analysis of this process in the case of agricultural research.⁶

It is interesting to highlight that in the first meeting of the Global Forum it was pointed out that research partnerships may involve some *transaction costs* compared to research endeavors in a single research centre. But on the basis of the three considerations that have been made, it was considered that these transaction costs are justified in terms of avoiding the potential dangers (and costs) of growing technology gaps, and thus increasing inequities within or among countries. The greater dissemination of knowledge and research capacities, and thus of innovation, is the only way of coping with this problem. They are also justified in terms of the **greater cost-effectiveness** in increasing the possibility of development impact because of the involvement of stakeholders and end-users in this process. The gains therefore offset the transaction costs involved. In fact, in some cases cooperation and innovation networks may be the only way of coping with some of the research and development issues involved, at least in an effective way. But it was also pointed out that the issue of transaction costs and of cost-effectiveness was one that had to be clearly monitored.

The origins of the Global Forum lie in the IFAD-convened meeting held in Rome in December 1994 and in the recent efforts of the CGIAR to broaden its partnerships with national agricultural research systems (NARS), regional organizations, advanced research institutions (ARIs), non-governmental organizations (NGOS), universities, and the private sector, among others, and to increase the participation of the South in CGIAR decision-making. These ideas have been developed as part of the **Renovation Process** launched by the Chairman of the CGIAR.⁷ This process involved consultation with groups of NARS on the substance of research collaboration, the subsequent emergence of

⁴ See IIASA: *Proceedings of the International Workshop on The Global Science System in Transition*; Vienna, IIASA, May 1997.

⁵ See Rodney Nichols: *Proceedings of the Belagio Conference on Global Collaboration in Science and Technology*; New York, New York Academy of Sciences, 1996.

⁶ See C. Bonte-Friedheim and K. Sheridan: *The Globalization of Science: The Place of Agricultural Research*; The Hague, ISNAR, September, 1997.

⁷ See “*Renewal of the CGIAR: Sustainable Agriculture for Food Security in Developing Countries*”; Proceedings of the Ministerial-Level Meeting held in Lucerne, Switzerland, February 9-10, 1995; Washington, CGIAR, 1995.

representative regional groupings (Regional Fora), and, finally, a Global Forum (section 2 describes this consultation process in more detail).

It should also be pointed out that the need for collaboration and for the development of research partnerships and strategic alliances was also being actively sought by research institutions and firms in both developed and developing countries, as a way of responding to the increasing challenges they are facing. Four important considerations clearly pushed in this direction:

- Increasingly complex and urgent development problems, which generate growing research needs and thus expanding research agendas.
- At the same time, decreasing availability of public resources devoted to research, as reflected in both real expenditure per researcher and the annual growth rate in research expenditure.
- The impact of globalization in terms of promoting cooperation in tackling development challenges that are of a global nature. These challenges form part of the global agenda that is dominating this end of century.
- As pointed out above, innovation and technical change is increasingly the product of transnational research networks facilitated by advances in information and communication technology (ICT), making communication among researchers across the globe faster and less costly.

This last point is particularly important. Research carried out on innovation processes and innovation systems has clearly emphasized the role of *innovation networks* as the main agent of knowledge generation and technical change in both the industrial and agricultural sectors.⁸ The same has been found to be the case in the area of biotechnology, where corporations form partnerships as part of their strategy to increase their competitive advantage. A recent CGIAR report points out that “Having an internal research capacity is necessary but not sufficient for innovation. The complexity of the problems faced and the rapidity of the advances in knowledge compel companies and their researchers to reach out widely for partners.”⁹ Another study points out that “when the knowledge base of an industry is both complex and expanding and the sources of expertise are widely dispersed,

⁸ See for example B.A. Lundvall: *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*; London, Printer Publishers, 1992. Charles Edquist: *Systems of Innovation: Emergence and Characteristics*; London, Castell Academic Press, 1997. Richard Nelson: *The Agenda of Growth Theory: A Different Point of View*; New York, Columbia University, 1995.

⁹ See CGIAR: *Strengthening CGIAR-Private Sector Partnerships in Biotechnology*; CGIAR Secretariat, April 30, 1997, pp. 8-9.

the locus of innovation will be found in *networks of learning*, rather than in individual firms.”¹⁰

These research partnerships and networks involve the active participation of National Agricultural Research Systems (NARS), International Agricultural Research Centres (IARCs), Advanced Research Institutes in universities or centres of excellence around the world, the private sector, NGOs and Farmers’ Organizations. The IARCs are particularly well placed to play an important role in this process, given the high-quality research infrastructure they have, their knowledge of tropical agriculture, the network of contacts in developing countries, their germplasm collections, and the highly trained research staff that constitute one of their main assets. At the same time, given the growing capacity of NARS, national research institutes will play an increasingly important role in generating and organizing such research networks. Promoting this is a particularly important dimension of the Global Forum.

2. Consultation Process with NARS and other partners of the Global Forum

The ideas analyzed in the previous two sections, as well as the establishment of the Global Forum on Agricultural Research, were the result of an open and participatory process that has involved the various stakeholders and actors of agricultural research and sustainable development. A *deliberative process* to embrace the new vision of a global agricultural research system and address the complex challenges of reducing poverty, increasing food security while conserving the environment, through cost-effective partnerships and a comprehensive global research agenda, was initiated in December 1994. This international consultation process that began with a “*NARS’ Vision of International Agricultural Research*” convened by the International Fund for Agricultural Development (IFAD) in Rome, produced a series of recommendations to strengthen NARS-CGIAR partnerships and to strengthen NARS/NARS cooperation at the regional and sub-regional levels.

These ideas have been developed as part of the *renewal process* launched in May 1994 (MTM94 in New Delhi), by the Chairman of the CGIAR. Following the adoption of the *Outline Action Plan* that took place at International Centre’s Week in October of 1995

¹⁰ See W.W. Powell, K.W. Koput and L. Smith-Doerr: “Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology”; in: *Administrative Science Quarterly*, No. 41, 1996, pp. 116-145. Rosabeth Kanter: “Collaborative Advantages: The Art of Alliances”; in: *Harvard Business Review*, July-August, 1994.

(ICW95), two important steps were taken as part of the process of consulting with the various stakeholders and actors of agricultural research. First, two Committees were established by the CGIAR in order to consult with institutional sectors that play an important role in this process: NGOs and the Private Sector. Secondly, a series of *Regional Consultation Meetings* were held to consult with the NARS, as one of the key actors in agricultural research and sustainable development. These meetings took place in late 1995 and early 1996:

- West Asia and North Africa (WANA), December 10-11, 1995
- Asia-Pacific (AP), February 1-2, 1996
- Sub-Sahara Africa (SSA), February 5-6, 1996
- Latin America and the Caribbean (LAC), February 20-22, 1996

In ICW95 a *Task Force on Central/Eastern Europe and the Former Soviet Union* was appointed, to assess whether and what kind of programme should be undertaken in that part of the world (CEE/FSU). As part of that process, two meetings were organized by the CGIAR Task Force: Prague (May 1996) for Central and Eastern Europe, and Tashkent (September 1996) for Central Asia and the Caucasus. The final report of the Task Force was presented and endorsed at ICW96 (October 1996), which represents a first step in the direction of a “regional approach” to agricultural research in these countries.

The ideas mentioned in sections 1 and 2 of this report were discussed in each Regional Consultation meeting, placing emphasis on how best to respond to both the opportunities and the challenges that were emerging in the new knowledge-based and science-intensive global environment in which we operate. Two main results came out of these four regional consultation meetings. In the first place, each one came up with *Regional Plans of Action* aimed at strengthening regional cooperation in this sector, as well as strengthening interaction with the CGIAR. Secondly, they all decided to establish a Regional Forum in each region, as a mechanism aimed at promoting and facilitating research partnerships between the NARS of each region, and between the latter and the other key actors of agricultural research (IARCs, ARIs, etc.). It should be pointed out that in the case of Africa the February 1996 meeting was only a preliminary meeting. It wasn't until February 1997 that FARA was formally established, as a Regional Forum on Agricultural Research.

It should be pointed out that within the **Regional Fora**, special emphasis has been placed in strengthening **Sub-regional cooperation mechanisms and programmes**, especially in the case of Africa (ASARECA, CORAF and SACCAR), and of Latin America and the Caribbean (the PROCIS and SICTA in the latter). The regional and sub-regional levels complement and reinforce each other; the first one does not replace the second one. In fact, in many cases the most operational unit for cooperation is the sub-regional one, given the fact that it brings together relatively homogeneous groups of countries.

A special meeting of NARS leaders was organized at MTM96 in Jakarta, where the Regional Action Plans that came out of the Regional Fora meetings were presented and discussed. Between May and September of 1996 the four Regional Fora collectively prepared a synthesis proposal, based on the ideas proposed in the four Regional Action Plans: a ***Plan of Action for Strengthening Global Agricultural Research: The NARS Perspective***. In the process of preparing the synthesis document the chairpersons of the four Regional Fora met in Rome on August 26 to 30, 1996, with the facilitating agencies that had supported all the process (IFAD, FAO, ISNAR, SDC, EC, WB/ESDAR and the CGIAR Secretariat). It should be pointed out that this group of facilitating agencies have played a key role in all this consultation process. In the coordination meeting in Rome in August 1996, the chairpersons of the four Regional Fora established the NARS Global Steering Committee (NARS-GSC)¹¹, in order to facilitate and coordinate action at the global level.

The *Plan of Action/NARS Perspective* mentioned in the previous paragraph, along with various presentations on global research partnerships analyzed from different perspectives (NGOs, Private Sector, Farmers' Organizations, and ARIs), were presented and discussed at the Global Forum on Agricultural Research that took place in Washington, D.C., on October 30-31, 1996. It was on the basis of all of these inputs generated by an open and participatory process, that the ideas, objectives and principles mentioned in sections 1 and 2 of this report emerged. Thus the establishment of the Global Forum on Agricultural Research has been very much a bottom-up approach, based on consultation with the stakeholders and with all the key actors involved, and seeking to assure their commitment to the goals and the approach that is being adopted. This is also the reason why the Regional Fora and the Sub-regional cooperation programmes are the main building blocks and operational units of the Global Forum.

¹¹ At their meeting of 26 October 1997, they decided to change the title into NARS Steering Committee (NARS-SC) in order to avoid any confusion with the Global Forum Steering Committee (GFSC) set up in Washington in October 96, whose they are full members.

Part II
Plan of Action of the
Global Forum on Agricultural Research

One year has elapsed since the formal establishment of the **Global Forum on Agricultural Research** in October of 1996. In this first year good progress has been made in terms of putting in place the support mechanisms, defining organizational aspects, and strengthening the interaction among the various partners. The activities carried out are summarized in the *1996-1997 Activity Report* of the GFAR.¹²

This **Plan of Action 1998-2000** has been prepared on the basis of consultations that have taken place both at the Regional/Sub-regional level, as well as the global level. As pointed out in the previous section, a series of consultation meetings have been held in 1996 and 1997 in various regions of the world, seeking to involve the different stakeholders related to agricultural research. The principal consultation meetings took place in:

- West Asia and North Africa (WANA): December 1995, and October 1997
- Asia-Pacific (AP): February 1996, and October 1997
- Sub-Sahara Africa (SSA): February 1996, and February 1997
- Latin America and the Caribbean (LAC): February 1996, and September 1997 (meeting of the *Junta Interamericana de Agricultura - JIA*)
- Consultation meetings in Central and Eastern Europe (Prague, May 1996), and in Central Asia and the Caucasus (Tashkent, September 1996)
- Europe: European Colloquium in Montpellier: September 1997

Besides the regional meetings, many sub-regional meetings have been held, especially in the case of Africa and of Latin America and the Caribbean, where the sub-regional groupings play a very important role.

At the global level, the Global Forum Steering Committee (GFSC) has met twice: the first meeting took place in May 25, 1997, in Cairo, and the second one on October 29, 1997, in Washington. Besides the GFSC, the working committees that have been set up to facilitate the participation of the various stakeholders related to agricultural research have also met throughout this last year: the Private Sector Committee, the NGO Committee, and the NARS Steering Committee. As previously pointed out, the first two committees were set up by the CGIAR as CGIAR partnership committees. These different consultation and coordination mechanisms have generated the ideas that are reflected in this Plan of

¹² See *Global Forum on Agricultural Research: Report of Activities 1996-1997*; Bogotá, GFAR, October 1997.

Action. The Plan of Action is conceived as a dynamic document that will continuously evolve and be modified over time, in order to adapt it to the needs and requirements of the various stakeholders and partners that constitute the Global Forum on Agricultural Research.

This Plan of Action identifies the main *Lines of Action* or *thrusts* that will orient the activities of the Global Forum. Within this framework, a more detailed Programme of Work will be prepared, on the basis of the interest that may be expressed by the various stakeholders, and on the basis of the availability of funds. It is important to point out that **most of the activities that will be carried out within the framework of this Plan of Action will basically be carried out through the *Regional and Sub-regional Fora*, working closely with NARS, IARCs, ARIs, NGOs and the private sector.** This reflects the fact that the GFAR works through its member organizations, not as a separate entity.

It should also be pointed out that this Plan of Action has been conceived in a “modular” fashion. The plan identifies a range of programmes or activities (modules) that can gradually be implemented in the next two to three years. The number of modules that can be implemented, and the speed at which they can be initiated, will depend on the amount of resources that will be available. The **GFAR Support Group** that is being envisaged, constituted by countries/agencies interested in supporting some of the activities described in this document, can play an important role in the process of operationalization of this Plan of Action. In this perspective, the GFAR Support Group can be conceived as a group where the relative priority and interest of these programmes and activities can be analyzed, in consultation with institutions interested in supporting some of them, in order to determine what can realistically be done.

The Plan of Action is presented in three chapters. The first one (chapter 3), outlines the **mission** and the **objectives** of the Global Forum, as well as the **criteria** that will be used in developing the relevant programmes and activities. Thus this chapter provides the general framework for action. The second chapter (chapter 4) outlines the **activities that will be supported by the GF-SC Secretariat** (located in ESDAR). The third chapter (chapter 5) presents the **activities that will be supported by the NARS-SC Secretariat** (located in FAO). It is very important to assure close coordination and interaction between the activities carried out by the GF-SC and the NARS-SC secretariats. In fact, the various activities are conceived as complementary to each other.

An important difference between the two secretariats should be pointed out. The *GF-SC Secretariat* will carry out specific activities at the global level. For example, it will organize the Meetings of the Global Forum every three years, it will develop an Electronic Global Forum on Agricultural Research (EGFAR) as a global information exchange system, and it will carry out specific studies on generic agricultural research issues of global interest. On the other hand, the main purpose for the establishment of the *NARS-SC Secretariat* is to facilitate the strengthening of NARS, the participation of NARS in the

Regional/Sub-regional and Global Fora, and the establishment of research partnerships through the interaction of NARS with the other actors or partners in the Global Forum: IARCs, ARIs, the private sector, NGOs and Farmers' Organizations. When requested, specific studies of interest to NARS and/or Regional/Sub-regional Fora will be done by the NARS-SC or its Secretariat. Thus, most of the activities that appear in chapter 5 of this Plan of Action will be carried out by Regional and Sub-regional Fora, or by institutions that constitute the NARS and the organizations they interact with. Other support activities will be carried out at the request of the NARS Steering Committee. This distinction is being systematically reflected in the work programmes of the two secretariats.

In this first version of the Plan of Action **priorities** among the various activities have not yet been established. **Concrete targets, accountable results** and **budget figures** also have to be defined for each activity. Some of the proposed Lines of Action are described in more detail than others, reflecting the fact that more preparatory work has already been made in this initial stage. These practical questions define the next steps that will be taken in translating this Plan of Action into a specific Programme of Work.

3. Framework for Action: Mission, Objectives and General Criteria

In this chapter we will briefly describe three important parameters that define the philosophy and the general orientation of the Global Forum on Agricultural Research. These are its mission, its objectives, and the general criteria that will be used in identifying and developing the activities that will be pursued.

3.1 Mission Statement

Chapter 1 analyzes the increasing importance of research partnerships, research networks and strategic alliances, in the present context of the changes that are taking place in global science and in the organization of research. These trends are leading to new patterns of research organization around the world, that are profoundly changing the global science system.¹³

¹³ Several recent reports have analyzed the new research patterns that are increasingly characterizing global science. See for example the proceedings of the International Workshop on "*The Global Science System in Transition*", organized by the International Institute for Applied Systems Analysis (IIASA), in Laxenburg, Austria, May 23-25, 1997.

It is in this context that the Global Forum on Agricultural Research (GFAR) was established as a global framework that facilitates exchange of information, access to knowledge, scientific cooperation and research partnerships among the various stakeholders related to agricultural research and sustainable development. In doing so, it seeks to strengthen national agricultural research systems (NARS) and regional and sub-regional fora, as key elements in the process that leads from knowledge-generation to knowledge-utilization and development, through a greater degree of end-user involvement. Chapter 1 also analyzes the fundamental beliefs that are at the basis of the GFAR, and the important role played by innovation networks or *networks of learning* as key instruments in the effective utilization of science and knowledge in attaining development objectives.

On the basis of these considerations, the **mission** of the Global Forum on Agricultural Research is to:

Help mobilize the various stakeholders that constitute the global agricultural research community, in their efforts to alleviate poverty, increase food security and promote the sustainable use of natural resources.

3.2 Objectives of the Global Forum

Five main objectives have been identified for the Global Forum on Agricultural Research, in pursuing its mission:

- a) **To facilitate the exchange of information and knowledge:** The GFAR will seek to facilitate the exchange of relevant information and knowledge among its various stakeholders. It will thus seek to promote the utilization of the new information and communication technologies (ICT), as a means of facilitating not only the flow of knowledge but also its effective utilization in development. This may also entail addressing the issue of *knowledge-brokerage*, as an important element in the effective utilization of knowledge for development purposes (in such areas as food policy, genetic resources and biosafety, besides sustainable production technologies as such).¹⁴
- b) **To foster cost-effective collaborative research and development partnerships among the various stakeholders related to agricultural research and sustainable development:** Facilitating the development of research partnerships

¹⁴ On the concept of *knowledge-brokerage*, and the various forms it takes, see IDRC/IFIAS: *Strengthening Innovation Systems: A Multi-Partner Policy Development Program on Knowledge-Brokering*; Ottawa, IDRC, July 1997.

and research networks is one of the main objectives of the GFAR. These partnerships will be promoted both in the South/South and North/South dimensions. These research partnerships and networks involve the active participation of National Agricultural Research Systems (NARS), International Agricultural Research Centres (IARCs), Advanced Research Institutes (ARIs) in universities and centres of excellence around the world, the private sector, NGOs and Farmers' Organizations. This is the main instrument for the mobilization and integration of the global agricultural research community, around the development objectives mentioned in the mission statement. In doing so, special attention will be given to developing *cost-effective partnerships*. Not all possible partnerships are cost-effective. In many cases research should simply be carried out in one location, and then disseminated as widely as possible. But even in these cases research and innovation networks play a key role in assuring end-user involvement and effective utilization of research results.

- c) **To promote the integration of NARS and the enhancement of their capacity to generate and transfer technology that responds to the needs of end-users:** This objective responds to the basic conception of making the NARS the cornerstone of the new global agricultural research system. NARS play a key role in making the bridge between needs-assessment (priority setting), research, technical change and adoption/innovation. Thus they are the key to a global farmer-back-to-farmer interchange that can drive broad scientific advances in agriculture, assuring that they relate to location-specific production circumstances and ecological problems. Capacity-building, communication and mutual respect are key elements to assure a stronger role for NARS and for their regional associations (Regional/Sub-regional Fora). But this also involves facilitating the evolution from NARIs to NARS, as an important step in the direction of involving the stakeholders and the end-users, and thus making them more effective.
- d) **To facilitate the participation of all stakeholders in the priority-setting process, in order to achieve a truly global framework for development-oriented agricultural research:** The purpose of this objective is to assure that the global research agenda be development-driven, and based on the real needs of end-users. This is an important element both at the global and the national levels. This requires developing a greater *priority-setting capacity* at the various levels: the national level (NARS), the regional/sub-regional level, and the global level. A specific dimension of this objective is that of facilitating the participation of NARS in the CGIAR, and in influencing strategic orientations and priorities. Strengthening the participation of NARS in the strategic planning exercises of IARCs, and their interaction with TAC, is a very important component of this objective. A valuable experience has developed in recent years, especially at the level of NARS/IARC interaction. But this objective is not only limited to influencing the CGIAR agenda. It is also aimed at the agenda of the rest of the international agricultural research system, where other stakeholders play a very

important role (ARIs, the private sector, etc.). This objective also involves developing a greater *evaluation capacity*, in order to be able to assess the extent to which we are really reaching the objectives and targets that are being pursued. The present impact-assessment effort that is being carried out in the CGIAR system is very useful for NARS and other relevant stakeholders.

- e) **To enhance awareness among policy-makers and donors of the need to secure long-term commitment and investment in agricultural research:** Given the magnitude of the problems related to food security, rural poverty and sustainable development, and the investment requirements this generates, it is of paramount importance to assure that these development issues are reflected in both national policies, as well as the Global Development Agenda. This is a task that should be collectively pursued by the stakeholders of the GFAR.

These five objectives have multiple interactions and complementarities among them. They require concerted action at the various levels at which the GFAR operates: the national, the regional/sub-regional and the global. **One of the main characteristics of the Global Forum comes from the synergies that can be generated by concerted action at the three levels, involving researchers, end-users, and other stakeholders committed to sustainable and equitable development.**

3.3 Principles or Criteria that will Orient GFAR Activities

Given the multiplicity of development needs and the limited resources available, it is important to define a set of principles or criteria that may selectively orient the efforts of the GFAR. The following principles have been adopted for such purpose:

- a) **Subsidiarity:** The GFAR is based on a principle of subsidiarity: programmes and projects should be both planned and managed at the most local level in which they may be effectively completed. This seeks to assure a participatory, bottom-up approach, within the context of a global system.
- b) **Complementarity to existing efforts/initiatives:** The GFAR is a facilitating mechanism that seeks to develop a global agricultural research system, through assuring complementarities and developing synergies among the various stakeholders that participate in it. Thus it is important to complement existing efforts and initiatives, avoiding duplication of what other actors are already doing. The activities it promotes should be clearly related to the explicit development of these synergies and complementarities among the different actors involved, through relevant research partnerships. An important trait of the GFAR is that it basically operates through its stakeholders (NARS and their Regional/Sub-regional Fora,

- ARIs, IARCs, NGOs, the private sector). It is not *another actor* that develops its own agenda.
- c) **Additionality (value-added products):** The programmes and activities supported by the GFAR should specifically aim to add value to what each stakeholder can do on its own. This is the principle of additionality. The complementarities and the synergies developed among the stakeholders and participating research institutions should clearly generate an added-value in terms of research capacity, knowledge-generation or effective development impact.
 - d) **Openness and transparency of its activities:** In order to assure the competitive identification of the best ideas and action proposals, and to give everyone a chance to participate, an open and transparent process should be followed in developing the projects and activities that will be carried out and supported by the GFAR.
 - e) **Involvement of all stakeholders: NARS, ARIs, IARCS, universities, Farmers' Organizations, NGOs, and the private sector:** As pointed out above, the Global Forum basically operates *through* its stakeholders (NARS and their Regional/Sub-regional Fora, ARIs, IARCs, universities, Farmers' Organizations, NGOs, and the private sector). Thus the programmes and activities that will be promoted by the GFAR will basically be carried out by these actors. They constitute the operational capacity of the Global Forum. The GFAR should not be seen as another "organizational layer" that is established. It is thus of the utmost importance to assure the active participation and involvement of all stakeholders. This is one of the main responsibilities of the Regional Fora.
 - f) **Research partnerships based on common interests and mutual benefits:** The Global Forum is based on a principle that reflects an important change that is taking place in the development world: the **evolution from the traditional concept of development-aid, to that of working together in research partnerships built on common interests and mutual benefits.** This is a much more effective way of addressing the challenges we face. Researchers collaborate when they have a scientific interest (incentive) to do so. This is facilitated by better knowledge and information on what other groups do, and by personal relationships. It is made possible through financial support. But the *common scientific interests* they share and the *mutual benefits* they expect to derive, is the basic driving force behind cooperation. Thus research cooperation should be based on common interests and mutual benefits, that may bring together around specific topics the research communities in both developed and developing countries, as well as the various stakeholders of agricultural research and sustainable development.

4. Lines of Action Supported by the GF-SC Secretariat

The various programmes and activities through which this Plan of Action will be implemented will be supported by two secretariats: the Global Forum Steering Committee Secretariat, and the NARS Steering Committee Secretariat. This chapter describes the part of the Plan of Action that will be supported by the Global Forum Steering Committee (GF-SC) Secretariat.¹⁵ This first part is organized around five main Lines of Action. Chapter 5 describes the second component of the Plan of Action that will be supported by the NARS Steering Committee Secretariat.

4.1 Institutional Activities

- 4.1.1 **Organization of GF-SC Meetings:** Convening the two yearly meetings of the GF-SC, at the time of ICW and MTM.
- 4.1.2 **Meetings of the GFAR every three years:** Preparation for the meetings of the Global Forum on Agricultural Research that will take place every three years. This includes both the preparation process as well as the organization of the GFAR Meetings. This also entails monitoring the implementation of the agreements that are reached in the GFAR meetings to make sure they are implemented.

4.2 Information and Communication at the Global Level

- 4.2.1 **Electronic Global Forum on Agricultural Research (EGFAR):** EGFAR will be set up to facilitate the flow of information among all interested parties and organizations. A preliminary presentation of the structure of EGFAR, and of the different services it can offer, was made at the October 29 GF-SC meeting that took place in ICW97. The decision was taken to continue developing EGFAR during a pilot project phase (November 1997 to May 1998), to allow persons/institutions to try it out and see how it operates. Improvements and adjustments will be made on the basis of the observations and suggestions that will be received from everyone. The system should be fully operational by MTM98 in Brazil. It is expected that the NARS and other partners of the GFAR will be an important user of EGFAR, as an

¹⁵ On the characteristics and functions of the GF-SC Secretariat see *GFAR: Terms of Reference for the Establishment of the Global Forum Steering Committee Secretariat*; Washington, October 29, 1997.

entry (or access) point to other INTERNET facilities related to agriculture and natural resources.

It is expected that EGFAR, in cooperation with InfoSys and other regional information systems (in cooperation with the Regional Fora), will facilitate/promote the development of electronic research networks, among researchers working in the same research area. Such networks are already under discussion or emerging in such areas as integrated pest management, socio-economic data, germplasm management, food policy, genetic resources policy and research planning and management issues.

4.3 Technical Activities

4.3.1 **Promote the development of a global research framework:** In the development of a Global Agricultural Research System it is important to carry out studies on generic agricultural research issues of global interest, such as sustainability issues, rural innovation processes, trends in agricultural research, etc.

4.3.2 **Promote an environment conducive to the exchange of knowledge at the global level:** Various factors have an impact on the flow of information and knowledge across institutions and across countries. One of such factors is the issue of **Intellectual Property Rights (IPRs)**. One of the challenges we face is that of maintaining a balance between developing appropriate IPRs that will promote private investment, while at the same time keeping an open and dynamic exchange of knowledge at the global level, in the form of international public goods. The main issue that is at stake here is the future of “*open science*”, as we have known it for decades, in light of recent trends that are leading to an increasing “*closing up*” of the international knowledge system. This reflects a particularly important change that is taking place in the biological sciences, specially in molecular biology, with the increasing importance of *proprietary technology* and the implications this is generating, both for global science as well as national research systems. This raises very basic questions of access to knowledge and technology. In this context, strategic alliances and research partnerships, especially between the public and the private sectors, can play an important role.¹⁶

¹⁶ An interesting analysis of these issues can be found in the recent report presented by the CGIAR Private Sector Committee. See CGIAR: *Strengthening CGIAR-Private Sector Partnerships in Biotechnology*; Washington, CGIAR Secretariat, April 30, 1997.

- 4.3.3 **Institutional models for agricultural research:** If considered useful, the GF-SC Secretariat could carry out studies on changing institutional models for agricultural research and technology transfer mechanisms and approaches.
- 4.3.4 **Research funding strategies and mechanisms:** Analysis of different approaches and strategies to the funding of agricultural research. There is an increasingly important trend towards competitive project-funding mechanisms at the national level (in various countries competitive funding mechanisms are appearing as an articulating element of NARS), at the regional level (i.e. the LAC Regional Technology Fund), and at the global level (i.e. USAID programme of competitive grants).

4.4 New Frontiers of Science: Biotechnology and Biosafety

- 4.4.1 **Trends in biotechnology and implications for agricultural research:** Analysis of the main factors that are shaping the development of biotechnology at the global level, and the implications of these trends both for agricultural research in general, and for developing countries. Factors that may influence the future evolution of biotechnology and its applications to food security and sustainable development issues.

4.5 Facilitating coordination with the CGIAR

- 4.5.1 **Collaboration with the CGIAR System-wide Review:** One specific case of facilitating coordination with the CGIAR is that of participating in the CGIAR System-wide Review. The NARS representatives met with the CGIAR System Review Panel during ICW97. It was agreed that besides the interaction that took place in ICW 97, a timetable of the Regional Fora Meetings that will take place in 1998 will be provided to the Secretariat of the System-Wide Review in order to facilitate their participation in these meetings. This will facilitate using the mechanism of the Regional Fora Meetings for consultations such as this one, covering a relatively large number of NARS and institutions present in these meetings, at a great economy of scale. This is an activity that both the GF-SC Secretariat and the NARS-SC Secretariat should promote, given the importance of involving the Regional/Subregional Fora.

4.6 Facilitating Coordination with the ARIs

- 4.6.1 **Strengthening the participation of ARIs in the Global Forum:** Advanced Research Institutes (ARIs), in both developed and developing countries, play an important role in agricultural research for development. ARIs have an important expertise in key areas that are relevant for the objectives of the GFAR, such as perennial crops (palm trees, coconut, hevea, fruit trees, coffee, cocoa), and some industrial crops (cotton and others), both in research and in development programmes. They could play a particularly important role in addressing research efforts in crops that are not currently in the CGIAR's mandate. Another important aspect of the involvement of ARIs and of Universities is that of developing joint graduate training programmes in key disciplines or areas of science, bringing together Universities from both developed and developing countries. This could also involve the interaction between Universities and other types of institutions (such as IARCs, NARS and the private sector). Given the importance of involving institutions in both developed and developing countries, the GF-SC Secretariat and the NARS-SC Secretariat should closely collaborate in promoting and facilitating this process.

5. Lines of Action Supported by the NARS-SC Secretariat

The second component of the Plan of Action will be supported by the NARS Steering Committee Secretariat that is in the process of being established in FAO.¹⁷ This second dimension of the Plan of Action is being organized around six Lines of Action. Proposals for specific projects and/or activities are being developed in each one of them. The proposals that will be implemented will depend on the interest expressed by the various stakeholders of the GFAR and on the availability of funds.

¹⁷ On the characteristics and functions of NARS-SC secretariat, see: *GFAR: Operationalization of the NARS-SC Secretariat*; Washington, October 26, 1997.

5.1 Strengthening Regional Cooperation (Regional/Sub-regional Fora)

- 5.1.1 **Support to Regional/Sub-regional Fora:** A Timetable with the dates of the Regional and Sub-regional Fora will be set up, in order to facilitate coordination and seek complementarity. Support will be provided to the Regional Fora, and exchange of information and experiences among them will be facilitated. This also entails following up on Regional Fora Meetings to see what is being implemented, and what support is required to assure that *agreements and decisions* become **action**. This requires the development of strategies to facilitate the selective implementation of agreements and decisions taken in Regional and Sub-regional fora, as important operational units of the Global Forum. This may also entail giving methodological support on how to determine regional/subregional research priorities, when requested by the respective group. One of the main priorities in this respect is to support the further development of the process in Central and Eastern Europe (CEE), and in Central Asia and the Caucasus (CAC), as a follow up to the Prague and Tashkent meetings, to see how they can participate in the Global Forum.
- 5.1.2 **Promote Regional/Sub-regional Funding Mechanisms for Cooperation in Agricultural Research:** One of the main objectives of the GFAR is that of facilitating and promoting research partnerships among the various actors and stakeholders involved in development-oriented agricultural research. This may be facilitated by the establishment of regional funding mechanisms, jointly supported by the countries of a given region and interested donors. Through these funding mechanisms we are seeking to increase the availability of funds for cooperation in agricultural research, complementing the existing mechanisms. In this first year of operation of the GFAR an important step in this direction has been taken by the creation of the **Latin American and Caribbean Regional Agricultural Technology Fund** (established as an endowment fund), jointly supported by 15 countries of the region, the Interamerican Development Bank (IDB), the Interamerican Institute for Agricultural Cooperation (IICA), IDRC of Canada and the Rockefeller Foundation. The Operations Manual and the Strategic Plan of this Regional Fund have been prepared and approved. The NARS-SC Secretariat could play an important role in facilitating the dissemination of this experience to other regions of the world. UNDP has expressed interest in exploring such possibilities (i.e. in Africa).
- 5.1.3 **Organize the meetings of the NARS-SC:** These meetings will take place in ICWs and MTMs, and whenever considered necessary.

5.2 Strengthening NARS

A second Line of Action of the activities that will be carried out by the NARS-SC Secretariat is that of supporting or promoting activities aimed at strengthening NARS, given the fact that they constitute a vital link between agricultural research efforts and development. It is through them that know-how and technology finally reaches the farmer and the end-user. But for this to be the case, it is essential to strengthen the capacity of NARS in the area of extension services and technology transfer. This requires placing the farmer at the centre, which may be achieved by working closely with Farmers' Organizations.

The NARS-SC Secretariat can play a very useful role in terms of *facilitating the exchange of experiences and information* on a variety of research management issues that play an important role in the process of strengthening NARS. Various international and regional organizations are involved in NARS strengthening activities (i.e. ISNAR, FAO, IFAD and IARCs). Thus the following activities will be carried out in close cooperation with them, placing particular emphasis on direct cooperation among NARS and among Regional/Sub-regional Fora (NARS/NARS dimension).

5.2.1 **Exchange of Experiences and Information on Institutional Development of NARS:** Major changes are taking place in developing countries in terms of organizational structures for agricultural research. Three such changes refer to:

- *New organizational structures for NARIs*, based on Public/Private sector joint ventures (i.e. CORPOICA in Colombia).
- *Integration of NARS:* What does it mean? How can it be achieved? Different approaches to this question. Among other things, this includes such issues as integration of NGOs, universities and the Private Sector into NARS.
- *Developing new approaches to technology transfer:* Technology transfer and extension services continue to be the single most important bottleneck in linking agricultural research to development efforts and impact. It is important to see how the GFAR can collaborate in disseminating experiences and new approaches to this key component of agricultural research and development. This involves building up partnerships with Farmers' Organizations.

5.2.2 **Facilitate/Promote training activities in research management and in leadership skills:** The development of research management capacities has been identified in all the Regional Fora as one of the most pressing needs of NARS, in seeking to strengthen them and make them more effective and efficient. Given the

important differences in the various contexts involved, training activities are more efficiently carried out at the regional/subregional and national levels. Thus these activities will be the responsibility of the Regional/Sub-regional Fora, and of the specialized agencies. The role of the NARS-SC Secretariat will be to create awareness of the importance of these issues, and to make sure the different topics related to research management are being addressed. This refers to such topics as planning and evaluation, as well as day-to-day management issues. It clearly includes strengthening the capacity of NARS for **priority-setting**. The development of **leadership skills** is equally important, both to develop local capacities as well as to facilitate research partnerships.

- 5.2.3 **Development of indicators for research planning and evaluation purposes:** One of the topics that has been raised by NARS in all the Regional Fora meetings is that of developing indicators related to the monitoring of various key issues: sustainable agriculture and environmental deterioration, scientific productivity, technology adoption, impact assessment or evaluation, etc. This is an area in which exchange of information, joint efforts and networking is possible, and with potential impact on increasing the effectiveness of NARS.
- 5.2.4 **Promote the development of innovation systems in the NARS of each region:** The effectiveness of NARS and of agricultural research is dependent on innovation processes and on the capacity to innovate in the rural sector. We know little on how innovation takes place in the agricultural sector of our societies. It is important to develop in the Regional Fora clear efforts oriented at increasing innovation in the rural sector, through action-oriented research on this topic. The NARS-SC will also facilitate exchange of experiences and of information on different approaches, among the various regions. The identification of “*best practice*” (benchmarking) could be an interesting approach to take.
- 5.2.5 **Facilitate dialogue and interaction between NARS and the CGIAR system:** The objective here is to facilitate the effective participation of NARS in influencing strategic orientations and priorities, working jointly with TAC for this purpose. This complements and strengthens the dynamic interaction that is already taking place between NARS and specific IARCs.
- 5.2.6 **Support and promote experiences in integrating other partners in agricultural research and development:** This specially refers to interaction with ARIs, the private sector, NGOs and Farmers' Organizations, that can play a particularly important role in this process. The objective here is to try to integrate the stakeholders of the other 96 % of global agricultural research, to development-related research and development efforts. This is an activity that the NARS-SC Secretariat should carry out in close collaboration with the GF-SC Secretariat (see section 4.6 on this).

5.3. Action-oriented Case Studies of Partnerships and Strategic Alliances

- 5.3.1 **Extrapolating from successful cases of technology change at the community level (NGO/Farmers partnerships).** In various countries of Africa, Asia and Latin America and the Caribbean there has been interesting and effective experiences of working with peasant communities in the generation and adoption of technologies suited to the needs of small producers. Many of them have been carried out by NGOs, often in collaboration with other community organizations. Some of these cases have developed very useful experiences in the area of agro-ecology, thus addressing the issue of sustainability as well as that of equity (technology for peasant economies). But one of the limitations these experiences face is that in most cases they are based on *successful projects* limited to *specific communities*, but their impact does not go beyond the direct area of influence of each project. One of the challenges these projects pose is that of “*extrapolating*” from these successful, but individual, cases, to the national level: seeking to reach a much larger rural population, with the objective of having an impact at the national level. This poses problems of “scaling-up”, as well as of transferring that experience to other groups and communities. This requires the systematization of the knowledge (experience) that has been generated in particular communities, in order to transfer (disseminate) it successfully. It also requires a greater integration of NGOs (their approaches and their experiences) with the NARIs and the other institutions that constitute the NARS in that country. Thus this may contribute to the integration of NGOs into the respective NARS.

It is proposed that a *pilot project* be carried out on **Scaling-up Successful Approaches to Technical Change and Community Improvement**. The pilot project could start with cases in Latin America and the Caribbean, moving then to cover cases in Sub-Saharan Africa, West Asia and North Africa, and Asia/Pacific. The objective is to analyze successful projects where NGOs and other actors have succeeded in introducing technological innovations that have improved the well-being of the community and its capacity for sustainable development, seeking to extrapolate their methodologies and approaches to other communities and institutions, in order to achieve a real impact at the national level. One of the interesting characteristics of this project is that it is not only an analytical *case study* as such. Besides analyzing and systematizing each experience, it will seek to extrapolate its lessons to other institutions and communities. It is thus an **action-oriented project** that seeks to produce concrete results in terms of development impact. It also has the additional characteristic that it will be aimed at *potentializing* projects that donors have supported in the past, but whose results or impact have basically been limited to specific communities, not having been able to reach a broader public or population. This is related to the French concept of “*valorisation de la recherche*”. The NARS and the NGO Steering Committees will jointly carry

out this project. In a workshop held in CIAT on October 13-17, 1997, a group of NGOs prepared a general methodological framework that is being used in the development of this project. Once the general project proposal is formulated, the cases will be selected in consultation with each Regional/Sub-regional Forum.

- 5.3.2 **Successful cases of NARS/IARC/ARIs partnerships.** A second type of case study refers to successful cases of joint projects or collaborative research efforts among IARCs, NARS and ARIs, with the objective of seeing what we can learn from these successful cases. Besides the analytical dimension of such case studies, an effort will be made to build upon these experiences in developing other similar partnerships and joint projects.

A concrete case of this could be to analyze what can we learn from research networks that have been operating in both developed and developing countries. Examples of such networks are NATURA and ECART in Europe, CONDESAN and RIMISP in the Latin American and Caribbean region, the Nile Valley Consortium in Africa, and the Upland Rice Ecosystem Network in Asia. What are the different forms that research networks and research consortia take? What factors determine their effectiveness and their success? What can we learn from these experiences in terms of strategies or organizational approaches that may increase their effectiveness? How can we assure end-user involvement in order to put the farmer at the centre and to increase the development-impact of such efforts? Annex II presents some additional ideas on the topic of research partnerships and research networks that could be used to orient GFAR activities in this Line of Action.

5.4 Information and Communication at Regional/Sub-regional Level

In all the Regional Plans of Action prepared by the respective Regional Fora the need for developing and strengthening the capacity of NARS in the area of information and communication was clearly mentioned. This area receives a high priority because:

- It plays a key role in facilitating access to information (international data bases and other sources of information), not only for researchers but also for producers (i.e. market information).
- It facilitates the exchange of research results and the participation in transnational research networks.

- The systematization of research results and of the data generated by it is of great importance, in order to increase the effectiveness of research (this requires systematizing local data bases).
- Information and communication is a key instrument in modern research.

Since this is an area where NARS are particularly weak, the NARS-SC Secretariat could play a facilitating and supportive role seeking to promote the development of this capacity in the National Agricultural Research Systems, or at the regional/subregional level. This will be done in close collaboration with the respective Regional Forum or Sub-regional group. The following activities will be carried out:

5.4.1 **InfoSys (Europe):** One of the specific activities that was initiated in the recent European *Colloquium on Agricultural Research* (Montpellier, September 25-26) was InfoSys, an information system aimed at facilitating access to European data bases related to agricultural research. This project builds on the experience of the FAO AGRIS/CARIS information system. InfoSys is made up by a series of data bases on ongoing agricultural research projects, publications and research results. This system is based on the concept of *decentralized data bases or information systems*. Each participating institution manages its own database, but does so in such a way that it can share the information with others (thus integrating a system). In Montpellier InfoSys received clear support from all participants, and was identified as a priority project. It was agreed that this system would seek to facilitate not only North/North and North/South information flows, but also South/South information sharing. That is, InfoSys can become an important support element in building up information-management capacities in NARS, through the information tools and the information management approaches it is developing. These information tools and information strategies can play an important role in building up such capacities in developing countries (in NARS).

5.4.2 **Support to other information systems in other regions:** Support will be given to other *regional information systems* that are emerging. Examples of this are the Regional Information System that APAARI is developing in the Asia-Pacific region, and the Regional Information System that the Latin American and Caribbean countries are starting to develop with IICA support, as part of the activities of the LAC Regional Forum. Another interesting case of regional data bases is the **Food Outlook** that the Pacific Economic Cooperation Council (PECC) has developed for the Pacific rim countries. Similar approaches are being followed in other Regional Fora, where interesting proposals are emerging. EGFAR could facilitate access to these data bases. The development of information systems is closely related to the issue of *indicators for monitoring and evaluation purposes* mentioned in paragraph 5.2.3. Promoting the development of electronic research networks to facilitate access to and use of information, is one of the activities these regional information systems will carry out.

5.4.3 **Computer dissemination in NARS:** The NARS-SC Secretariat will seek to convince the World Bank and other donor agencies of the importance of providing computers to NARS. There is great need in all developing countries to significantly increase the availability of computers, as well as the capacity of their population to effectively use the new information and communication technologies (ICT). A special effort will have to be made in Africa, where a qualitative jump has to be made in order to assure the active participation of these NARS in regional and global information systems (the Leland and AfricaLink initiatives that USAID is carrying out clearly contribute to this objective). This also facilitates access to available technologies. The insertion of NARS and of the Regional Fora in INTERNET, in the Integrated Voice Data Network (IVDN) of the CGIAR, and in agricultural information systems has to be assured.

5.5 Partnership Brokerage: Promoting the Development of Research Partnerships

Facilitating the development of Research Partnerships and joint ventures, which is what we refer to as **Partnership-Brokerage**, is one of the main functions of the NARS-SC secretariat. Through these activities this secretariat will be contributing to three important objectives of the Global Forum:

- Strengthening NARS as a key actor in the *Research/Technological Development/Innovation process*, in order to reach the development impact we are seeking to achieve.
- Identifying the role the other actors play in agricultural research: the Private Sector, NGOs, ARIs and Farmers' Organizations.
- Promoting research partnerships and strengthening strategic alliances among the various stakeholders and actors of agricultural research and development.

This part of the Programme of Work still has to be developed, but it could include activities such as the following ones:

5.5.1 **Information on ARIs and research consortia interested in agricultural research related to development.** This entails working closely with research consortia and research institutes in developed countries to promote their interest on research topics related to agricultural and rural development issues. It could imply looking into *curriculum development aspects* in universities in developed countries, since this can make an important contribution to the development of such interests. The possibility of promoting *joint ventures (or programmes) between universities in*

developed and in developing countries, is an interesting option that should be explored. In cooperation with the GF-SC Secretariat, the NARS-SC Secretariat can play a facilitating role in this regard (see section 4.6).

- 5.5.2 **Facilitating contacts between interested partners.** It is expected that through contacts with research institutions in both developed and developing countries it will be possible to identify practices or support services that may facilitate or promote research partnerships and consortia. This will have to evolve from practice.
- 5.5.3 **Promote/Support multilateral research networks, especially in agricultural production that is not covered by the CGIAR mandate.** The NARS-SC secretariat will seek to facilitate/support the participation of NARS in multilateral research networks, such as the cooperative research consortia that has emerged in Bananas and Plantains. Multilateral research networks or research consortia may be a particularly effective approach to mobilize research expertise, wherever it happens to be, to address global or regional issues related to sustainable development.

In Annex II we include some observations on research partnerships and research networks. A preliminary typology of research partnerships is presented, with a few examples of each type of partnership.

5.6 Strengthening NARS capacity in Biotechnology and Biosafety

In the recent *Meeting on Biotechnology and Biosafety* organized by WB/ESSD in Washington (October 8 and 9) three possibilities were identified in terms of activities the NARS-SC secretariat can carry out:

- 5.6.1 **Provide support to NARS in developing a relevant research agenda in Biotechnology:** In the Washington Meeting the relevance of biotechnology in terms of having the potential of contributing to the basic development issues of poverty, food security and sustainable development was clearly emphasized. The importance of developing a research capacity in IARCs and in NARS, at least to be able to use the technology and take advantage of its potential, was clearly emphasized. The importance of recognizing *different types of NARS* (some that have the capacity to contribute to biotechnology as innovators, and others that will mainly concentrate on adaptive efforts to be able to use the technology properly and safely), was also recognized. This defines a first aspect, which is that of giving support to NARS in defining a relevant and useful research agenda. The strategies may differ according to the different types of NARS.

- 5.6.2 **Assist NARS in developing Biosafety capacities:** The *regional and sub-regional groupings* of the Global Forum are particularly well suited to facilitating collective efforts in Biosafety capacity-building, covering groups of relatively homogeneous countries, in order to achieve wider impact and greater effectiveness. In some sub-regions we already have ongoing discussions of a *broad common legal framework* emerging at the sub-regional level, within which the national legislations define the biosafety regulations in more detail (within the parameters of the subregional framework). This is the case of the Andean countries (PROCIANDINO) and the Caribbean countries (PROCICARIBE) in the LAC region. This possibility should be further explored. Another possible activity at the sub-regional level is that of *common training activities* to reach a larger number of countries/institutions, achieving economies of scale. The possibility of setting up *common screening activities/services* at the sub-regional level will also be explored. This can be integrated into the Programme of Work to be carried out by the NARS-SC Secretariat.
- 5.6.3 **Support/facilitate specific cases of Public/Private sector joint-ventures in biotechnology:** The potentiality and importance of such joint-ventures was clearly recognized at the Washington meeting. The World Bank is playing here a leading role, through such initiatives as the possibility that is being explored of setting up a consortia for biotechnology research in bananas. The NARS-SC secretariat can collaborate with the World Bank in the follow-up to such agreements, in terms of mobilizing the interest of potential institutions.

6. Organizational Aspects of the GFAR

The Global Forum on Agricultural Research is constituted by the various stakeholders related to agricultural research and sustainable development: NARS, IARCs, ARIs (including universities), the private sector, NGOs and Farmers' Organizations. The GFAR is conceived as a global framework that facilitates exchange of information, access to knowledge, scientific cooperation and research partnerships among the different stakeholders and actors involved in this area of research and development efforts.

Figure 1 presents this in a graphical way. The upper part of the figure reflects the six constituencies that make up the Global Forum. In the lower part of the figure one may see the coordinating mechanisms that have emerged in the last two years: the Global Forum Steering Committee (GF-SC), the NARS Steering Committee (NARS-SC), the NGO Steering Committee, and the Private Sector Steering Committee. The last two were established through a different but complementary process, as CGIAR partnership committees. They are included in Figure 1 to point out the need for close coordination

among these various mechanisms. Close interaction and exchange of ideas and proposals is already taking place among them. In the case of the first two (the GF-SC and the NARS-SC), the membership of each one is described.

Figure 2 describes the regional structure that has emerged from the bottom-up process that has evolved over many years, in which NARS have gradually organized themselves in terms of Regional Fora and Sub-regional Associations or Programmes. These regional and sub-regional groupings have evolved over the last 5 to 10 years, reflecting the growing awareness of the need to develop regional and sub-regional cooperation mechanisms. It is important to point out that these regional and sub-regional structures have evolved gradually over time; they are not being established today from scratch. The NARS of the developing countries have organized themselves in four Regional Fora:

- a) Latin America and the Caribbean Regional Forum (LAC), whose secretariat is located in IICA.
- b) Asia/Pacific Regional Forum (AP), whose secretariat is located in APAARI.
- c) West Asia and North Africa Regional Forum (WANA), whose secretariat is located in AARINENA.
- d) Sub-Sahara Africa Regional Forum (SSA), whose secretariat is located in FARA.

The **Regional Fora** have sought to develop a wide participation of stakeholders. Thus they involve not only the National Agricultural Research Institutes (NARIs), but also the universities, the NGOs, the private sector and Farmers' Organizations.

The Regional Fora are in turn made up by more operational cooperation units or programmes, organized at the sub-regional level. These sub-regional units are:

- a) In the case of LAC: PROCISUR, PROCIANDINO, PROCICARIBE, PROCITROPICOS, and SICTA.
- b) In the case of Asia/Pacific: South East Asia, East Asia, West Asia, and Pacific.
- c) In the case of WANA: Maghreb, Nile Valley, Mashreck, Arabic Peninsula, and Western Asia.
- d) In the case of Sub-Sahara Africa: ASARECA, CORAF, and SACCAR.

The most recent development related to Regional Fora is the *European Colloquium on Agricultural Research for Development*, that took place in Montpellier, France, on September 25-26, 1997, under the sponsorship of EIARD, ECART and NATURA. A process to explore the possibility of establishing an European Forum on Agricultural Research for Development was initiated.

One important pending question is that of how to integrate Central and Eastern Europe (CEE), and Central Asia and the Caucasus (CAC), in the Global Forum. The initial idea that emerged at the Washington GFAR meeting of October 1996 was to have a

Regional Forum organized in this part of the world. This and other options are being discussed by the countries of the region, before a final decision is taken (see section 2).

Figures 1 and 2 make it quite clear that the **main operational units of the Global Forum** are the Regional/Sub-regional Fora (constituted by NARS), as well as the other stakeholders and actors related to agricultural research and sustainable development: the IARCs, the ARIs, the NGOs and the private sector. These are the institutions and organizations that will carry out the programmes and activities of the GFAR that constitute this Plan of Action. The philosophy of the Global Forum is to work through existing institutions; it does not seek to establish additional organizational layers. By facilitating the articulation and interaction among the various stakeholders, the Global Forum seeks to develop a global agricultural research system through the synergies and complementarities that are generated by research partnerships, research networks and strategic alliances. These are the building blocks that characterize the recently emerging research patterns and structure of global science (see section 1 of this document).

As previously pointed out, *global science* is not limited to what is done at the *global level* (i.e. in International Research Centres). It has to do with research that is done at the *local, national, regional/sub-regional and global levels*. **The involvement of any of these components in a global agricultural research system is achieved through its participation in research networks that facilitate the mobilization and flow of knowledge, wherever it is located, and its application to the solution of the concrete problems that are confronted in specific places or communities.** It is the interaction between these various levels, including the integration of end-users, that constitute the global system. This approach seeks to integrate both modern science, as well as indigenous knowledge, in the solution of the development challenges we confront. In this process, the regional and sub-regional dimensions that appear in Figure 2 (Regional/Sub-regional Fora) play a critical role.

But in order to achieve this objective, it is important to develop a strong commitment and a sense of purpose among the various stakeholders of agricultural research. Thus the need to generate consensus around the *Declaration and Plan of Action* that were approved in Washington in October of 1996, and that appear in Annex I of this document.

Figure 1
Global Forum on Agricultural Research

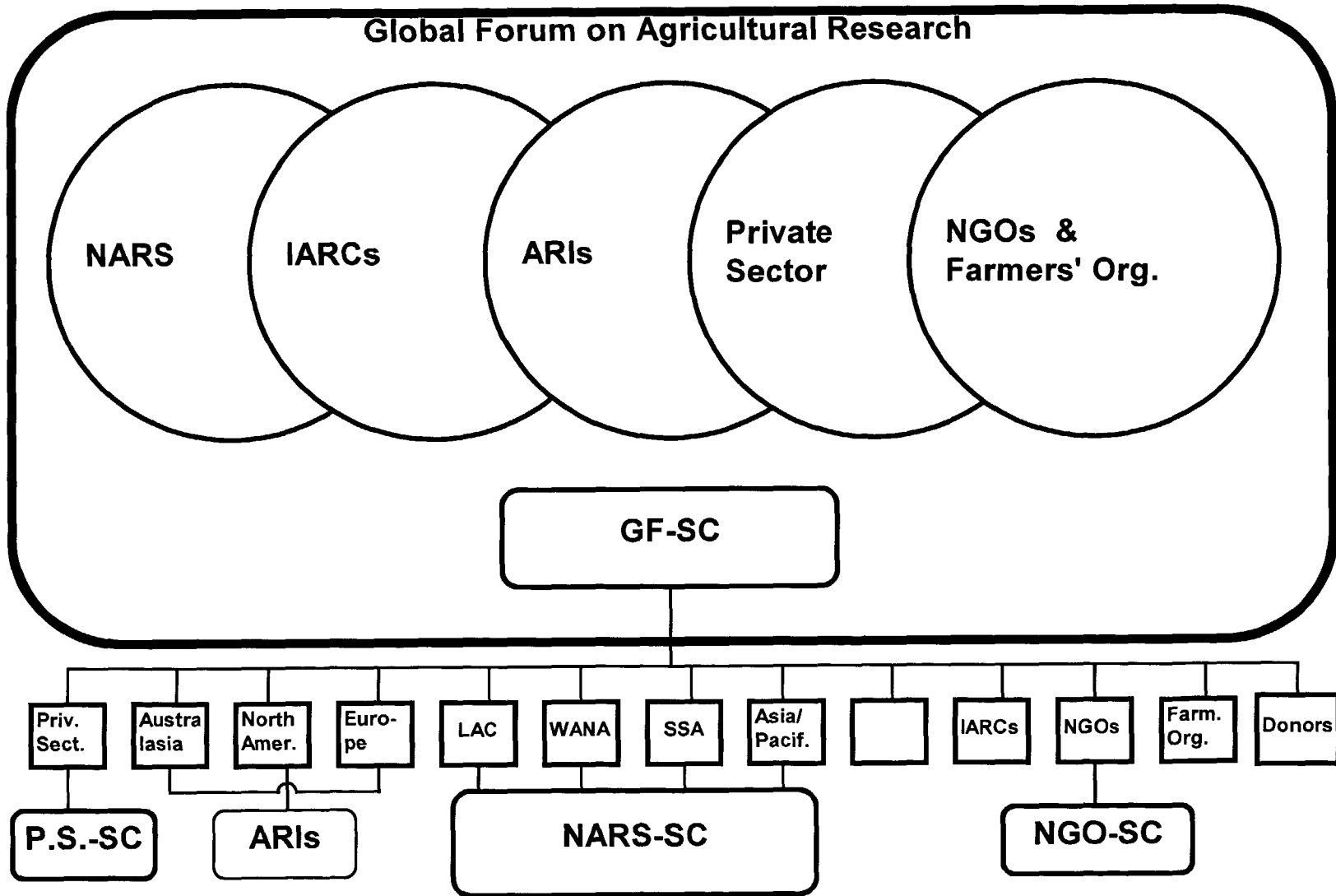
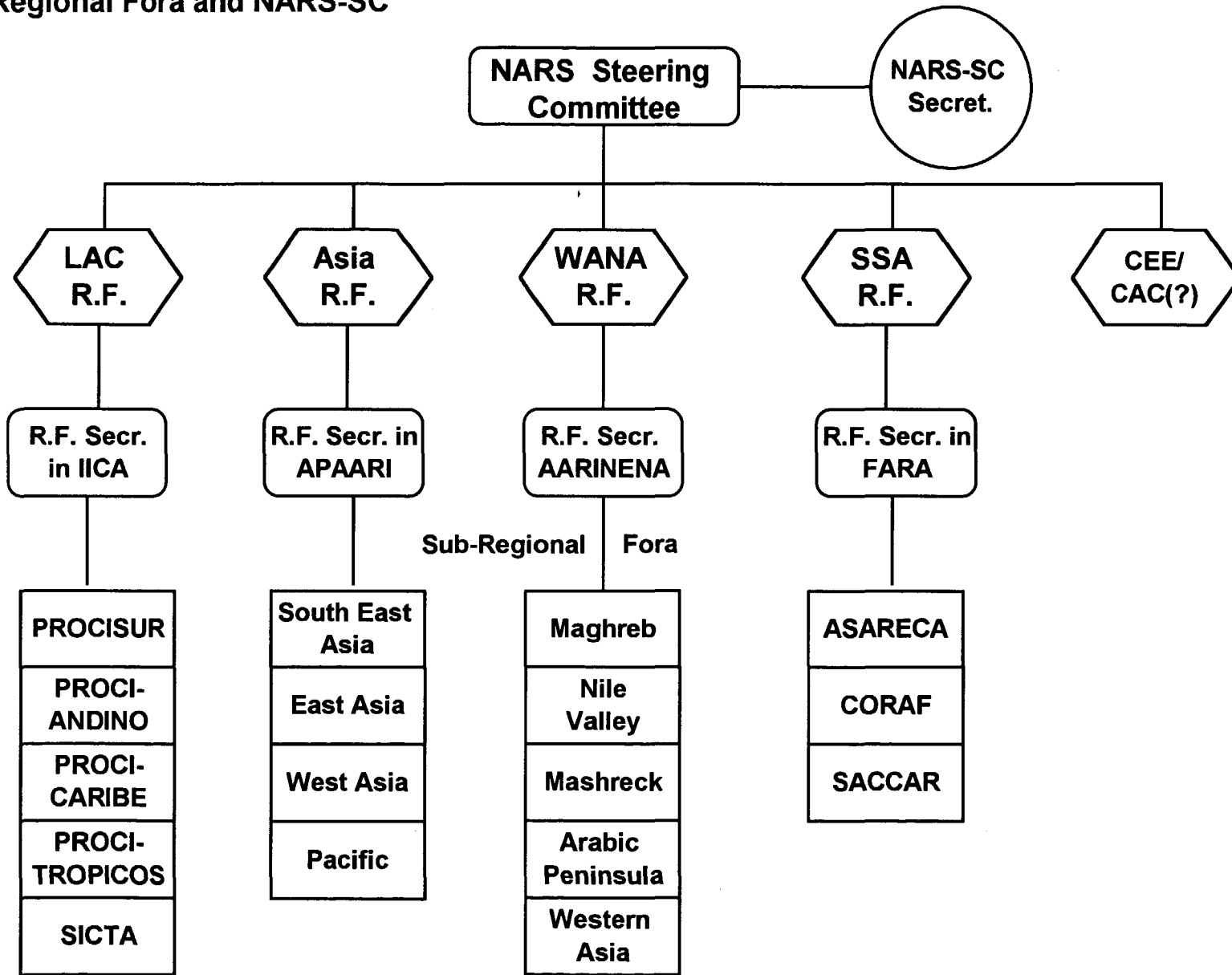


Figure 2
Regional Fora and NARS-SC



ANNEX

Annex I Declaration and Plan of Action for Global Partnership in Agricultural Research

In this Annex we include the text of the *Declaration and Plan of Action for Global Partnership in Agricultural Research* that were adopted on October 31, 1996, at a Global Forum on Agricultural Research, held in Washington, D.C., with the participation of a wide range of representatives coming from the various stakeholders of agricultural and natural resources research: NARS, IARCs, ARIs, NGOs, universities, Farmers' Organizations and the private sector.

DECLARATION

We, the representatives of the national agricultural research systems, regional and subregional organizations, universities, advanced research institutions, non-governmental organizations, farmers' organizations, the private sector, and international agricultural research centers, gathered in a Global Forum on Agricultural Research at the Consultative Group on International Agricultural Research, International Centers Week 1996:

Cognizant of the formidable challenges of the future, in particular the need:

- to alleviate poverty;
- to increase productivity and resource use efficiency to feed an expanding population; and
- to address environmental degradation, sustainably manage the natural resource base, and develop and implement more appropriate agricultural policies and sustainable technologies;

Aware that the world leaders are holding a summit to address the global challenge of ensuring food security;

Convinced that scientific and technological responses and sociocultural factors are essential elements in improving food and nutritional security, as well as more sustainable use of cropland, rangeland, aquatic, and forest resources;

Realizing that the national agricultural research systems are the cornerstones of the emerging global research system; and

Recognizing that current cooperative research arrangements need to be adjusted to meet challenges of unprecedented nature and magnitude:

Hereby affirm our strong commitment to contribute to the development of productive, sustainable and equitable agriculture. We recognize the crucial role played by farmers, especially women, in agriculture and natural resources management. We agree to work in partnership with them toward their empowerment, building on their indigenous knowledge systems.

We fully recognize the immense value of collaboration and research partnership and urge that such collaboration be governed by the principles of subsidiarity, participatory decision-making, complementarity of efforts, adaptability, openness, and, above all, a deep sense of commitment to the common purpose. We agree to meet the challenges of the present and the future through an efficient, effective, and coherent global agricultural research system.

PLAN OF ACTION

We commit ourselves to undertake the following actions, in the pursuit of our common objectives and the foregoing *Declaration*:

Mobilize the world scientific community in support of a global framework for agricultural research aimed at:

- alleviating poverty
- achieving food security; and
- assuring sustainable use of natural resources

Contribute to the strengthening of national agricultural research systems and the subregional and regional fora;

Foster the participation in research collaboration by national agricultural research institutes, regional and subregional organizations, international agricultural research centers, advanced research institutes, universities, the private sector, non-governmental organizations, farmers, and farmers' organizations;

Encourage the identification of concrete collaborative projects through suitable mechanisms, including subregional and regional fora; and

Convene a Global Forum on Agricultural Research every three years to exchange information in order to identify common challenges, confirm principles of collaboration, and propose alternative means of implementing collaborative programs with the purpose of facilitating partnerships.

We strongly believe that, by committing ourselves to this task and establishing the necessary enabling mechanisms, based on a bottom-up approach and strong national, subregional, and regional fora, the global agricultural research system will be capable of addressing the agricultural research priorities required to meet the challenges and opportunities that humanity is facing today and will face in the foreseeable future.

We propose, in order to implement this *Plan of Action*, to increase efficiency in research management and collaboration through the pooling of resources, and call on the development assistance community, the governments of developing countries, and all stakeholders in agricultural and rural development to increase their support to agricultural research.

We hereby mandate the Global Forum Steering Committee, consulting as necessary, to translate this *Plan of Action* into a detailed program of activities.

Annex II

Research Partnerships and Research Networks

It is by now clear that the recent advances in science and technology that have been achieved in the new strategic research areas, mainly in biotechnology and in ICT, can play a key role in overcoming the global problems of poverty, food security and environmental degradation in developing countries. Biotechnology alone cannot solve these problems. But, if used in conjunction with the other research tools related to plant breeding and crop management, biotechnology can contribute to a quantum jump in agricultural production, or to lowering production costs and increasing sustainability.

But if we are to take advantage of the opportunities generated by this knowledge revolution, **a strategy of facilitating and developing research partnerships and strategic alliances** among the different stakeholders could be followed.

These partnerships may involve universities, research institutes, International Research Centres and firms, and thus they involve *strategic alliances between the public and the private sectors*. For this to be feasible, it is important to develop a regulatory framework that, while protecting the public good, does provide the proper incentives for the private sector to invest. This environment does require a *change in organizational culture* in many research institutions, since it requires new attitudes and forms of interaction between public research centres oriented towards the development of public goods, and firms which are profit-oriented and interested in proprietary technologies. It also involves transnational research networks along a North/South, as well as South/South, dimension, especially if we want to integrate NARS and avoid the dangers of increasing technology gaps.

These research partnerships take various forms, but the most common modalities are: (a) **loose or open research networks**, (b) **research consortia** (when the networks become more formalized), (c) **joint ventures** (in specific projects), and (d) **licensing arrangements**. The relevance and advantage of each modality varies from case to case.

These four types of research partnerships define a *range of options*, that go from the open research networks constituted by peers in the scientific community working in a specific area or topic, to other forms of collaborative R&D that are characterized by **increasing levels of formality**, moving towards contractual relationships between partners that agree to collaborate in the development of a proprietary technology. There is a greater commercial relationship in the third and fourth type mentioned in the previous paragraph. It is important to point out that in the case of the development of proprietary technologies

the two last research partnerships play a much more important role (joint ventures and licensing arrangements).

Of these four types of research partnerships the first two have played a much more important role in agricultural research. **Open research networks** and **research consortia** are usually based on the flow of public information between researchers and/or research groups that share a common area of interest. Networks and consortia are better suited for the development of non-proprietary technologies, or for the exchange of general information in any research area. In the case of the Latin American and Caribbean countries, RIMISP is a good example of a research network, and CONDESAN a good example of a research consortia. In Africa we can mention the experiences of the In-Land Valley Consortium and the Nile Valley Consortium. In Asia there are several very dynamic examples, such as the Upland Rice Ecosystem Network. There are differences between networks and consortia, which make them more suitable for one or another circumstance.

The commercial dimension becomes much more important in the case of the research partnerships located at the other end of this range of options: **joint ventures** and **licensing arrangements**. The latter also require partners with a clear possibility of exchanging research results and technologies, and thus having the basis for interacting in such types of strategic alliances. INBIO in Costa Rica is a good example of a joint venture. CGIAR centres have already experimented with these forms of research collaboration, both with public research institutes and in some cases with private firms. Thus this typology of research partnerships identifies different organizational modalities that play different roles, and that are better suited for different objectives and circumstances.