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Service through Partnership

ISNAR's Strategy for the 1990s

isnar

International Service for National Agricultural Research

The mandate of the International Service for National Agricultural Research (ISNAR) is to assist developing countries in bringing about lasting improvements in the performance of their national agricultural research systems and organizations. It does this by promoting appropriate agricultural research policies, sustainable research institutions, and improved research management. ISNAR's services to national research are ultimately intended to benefit producers and consumers in developing countries and to safeguard the natural environment for future generations.

ISNAR offers developing countries three types of service, supported by research and training:

- For a limited number of countries, ISNAR establishes long-term, comprehensive partnerships to support the development of sustainable national agricultural research systems and institutions.

- For a wider range of countries, ISNAR gives support for strengthening specific policy and management components within the research system or constituent entities.

- For all developing countries, as well as the international development community and other interested parties, ISNAR disseminates knowledge and information about national agricultural research.

ISNAR was established in 1979 by the Consultative Group on International Agricultural Research (CGIAR), on the basis of recommendations from an international task force. It began operating at its headquarters in The Hague, the Netherlands, on September 1, 1980.

ISNAR is a nonprofit autonomous institute, international in character, and apolitical in its management, staffing, and operations. It is financially supported by a number of the members of the CGIAR, an informal group of donors that includes countries, development banks, international organizations, and foundations. Of the 16 centers in the CGIAR system of international centers, ISNAR is the only one that focuses specifically on institutional development within national agricultural research systems.

Service through Partnership

ISNAR's Strategy for the 1990s

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International Service for National Agricultural Research

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FOREWORD

ISNAR's first strategy, prepared in 1986, served the institute well. It provided the vision and guidelines for ISNAR's program at a time when the institute was establishing itself as a research-based service to the national agricultural research systems of developing countries.

Since that strategy was written, the world has continued to change dramatically and, with it, the national systems that ISNAR serves. Scientific institutions have evolved and diversified, with the research role of the private sector growing. Agricultural science has advanced significantly. Political change has swept Eastern Europe and Africa, altering the agendas of governments and donor agencies. Economic and agricultural development in many nations of the South, still under the heavy burden of foreign debt, has stagnated. And concern for natural resources and the environment has become global. New problems, such as the threat of global warming and the alarming and tragic increase in the AIDS death toll, as well as new opportunities, particularly in biotechnology, have arisen.

These are just a few examples of the forces transforming the global and local contexts in which national agricultural research systems in developing countries must operate. Change puts pressure on those systems to adapt, and this in turn has implications for ISNAR's service to them.

During the same period, ISNAR has changed in its own right. It has gained valuable experience through working with its national partners, and its staff and budget have doubled in size. In short, it has matured as an international service. Recently, the CGIAR system, of which ISNAR is a member center, has expanded its mandate and defined a new strategy. The system now puts more emphasis on promoting food self-reliance and sustainable production, with increased attention to the management of natural resources. In addition, there is a new commitment to forestry and fisheries.

Recognizing these developments, ISNAR's management and Board of Trustees decided in March 1991 to re-examine and, where necessary, revise the 1986 strategy. The task was assigned to a team of nine senior ISNAR staff, supported by an advisory committee. The revision drew on:

- *The results of various surveys and consultations involving policymakers and national research leaders, as well as other ISNAR stakeholders*
- *Intensive consultations among ISNAR staff*
- *A self-analysis carried out for the 1991 External Review*
- *The analysis and recommendations of the External Review Panel*

The new strategy that emerges from these efforts is a logical development of the 1986 one, with a few shifts in emphasis that respond to the development of national systems and to the lessons learned in the past five years. ISNAR's Board of Trustees and management are confident that

it will prove an effective guide, helping the institute to provide the diverse services needed by national systems at least until the end of this century.

This strategy document is intended to portray the future of ISNAR in broad brush strokes, not to provide a detailed canvass of its future operations. A demand-driven service such as ISNAR, faced with a rapidly changing external environment, can provide detailed resource allocations only over the short to medium term. This is the task of ISNAR's medium-term plan for the period 1993-98, which complements this document.

In these uncertain times, no institutional strategy should be regarded as sacred writ, its edicts to be ignored only at the institute's peril. That way lies rigidity -- a failure to adapt, and a moribund institute. On the other hand, nor should the guidelines of a strategy be lightly tossed aside to secure short-term gains in the course of operational planning. ISNAR's strategy will be periodically reviewed to ensure its continuing compliance with national needs. An opportune moment for the first such review will be towards the end of the first medium-term planning period, in 1997.

ISNAR's Second External Review, carried out in 1991, recommended that the institute's core funding be increased by 30%. This was recognition indeed of the value of ISNAR's work, and of the great demand for its services from developing countries. The review panel justified its recommendation in terms of the central role of ISNAR in institutional development, the magnitude of this task, and the institute's small size in relation to it. We at ISNAR hope that this strategy document will encourage its donors to increase their support accordingly.

Christian Bonte-Friedheim
Director General

John L. Dillon
Chairperson, Board of Trustees

The Hague, 3 April, 1992

CHAPTER 1

ISNAR: AN INTERNATIONAL SERVICE

Future increases in agricultural production in the countries of the South will be driven largely by research and technology development. Of this there can be no doubt. Gone are the days when nations could feed their growing populations merely by bringing new land into cultivation. Bold new technological solutions are needed to make agriculture more productive and to protect the natural resource base on which its future productivity depends.

A major share of the required R&D is being, and will continue to be, carried out in the laboratories and on the stations and farms of the more than 120 national agricultural research systems of the developing world. Data compiled by ISNAR indicate that developing countries now account for almost half the human and financial resources allocated globally to public-sector agricultural research.

In some areas of research, national scientists need to generate knowledge and technologies themselves. In others, technologies can be borrowed from external sources and then adapted to local conditions. Even when a country borrows technologies, considerable national expertise is needed to evaluate and test them, and to adapt those that are most promising.

In either case, agricultural research systems and organizations in developing countries need to be well planned, suitably structured, professionally managed, adequately funded and staffed, and focused on real needs. Otherwise, they will be unable to serve farmers, policymakers, and other users effectively. Governments need to put enlightened policies towards research in place to ensure that these conditions are met, enabling them to reap the benefits of past investments in developing scientific infrastructure and manpower. Such agricultural research policy and management issues are the entry point for ISNAR's support to strengthening agricultural research in developing countries.

ISNAR's mandate within the CGIAR system

The Consultative Group on International Agricultural Research (CGIAR) is an informal consortium of donors that includes national governments, development banks, international organizations, and philanthropic foundations. The CGIAR supports a network of international research centers located around the globe. The goal of the CGIAR system is to "work in partnership with national research systems to contribute to sustainable improvements in the productivity of agriculture, forestry, and fisheries in developing countries in ways that enhance nutrition and well-being, especially among low-income people." By its membership in this far-flung family, ISNAR participates in the most systematic global research effort ever mounted to improve the food security of the developing world. The goals, strategies, and priorities of the CGIAR provide the framework within which ISNAR develops its own strategy.

ISNAR was created by the CGIAR in 1979 with the mandate to help developing countries strengthen their national agricultural research. The founding of ISNAR marked the CGIAR's recognition that its goal could only be achieved if a solid research capacity was in place at the national level. In 1990, while reassessing its strategy, the CGIAR reaffirmed, and indeed gave greater prominence to, its long-standing objective of strengthening national research through the twin tasks of training scientists and supporting institutional development. While all the CGIAR centers contribute to these tasks, ISNAR is the primary instrument of the latter.

Although the CGIAR system has numerous scientific successes to its credit, its centers can provide only a partial solution to the developing world's agricultural and environmental problems. The system's ultimate impact rests on the ability of national research and development organizations to use the knowledge and materials generated by the centers to develop and disseminate technologies appropriate to the circumstances of their countries. This interdependence between national and international research cannot but increase in the coming years, as natural resource conservation and management issues receive greater emphasis.

As a service organization dedicated to institutional development, ISNAR has a special role within the CGIAR system. Most of the system's centers generate knowledge, technologies, and other products directly related to agricultural production, such as improved farming practices, higher-yielding or more stable crop varieties, and better trained scientists. In contrast, ISNAR's main products are related to institutions. They include more effective agricultural research policies, improved research system structure and coordination, better focused and more relevant research programs, and more efficiently managed resources and organizations. In this way, ISNAR's work complements and supplements that of the other CGIAR centers

Some national agricultural research systems have made considerable progress in the past decade. Their needs have changed, implying a shift of emphasis in ISNAR's own program. Others have developed less rapidly or have even declined in the face of adverse political or economic circumstances. Thus the mandate of ISNAR -- to strengthen national research -- remains no less relevant now than it was when ISNAR was founded.

ISNAR's goal

> *ISNAR's goal is to assist developing countries in bringing about sustained improvements in the performance of their national agricultural research systems and organizations.*

Working in partnership with national systems, ISNAR seeks to achieve its goal by supporting their efforts in institutional development, by developing or adapting new management technologies, by strengthening managerial skills, and by generating and disseminating knowledge and information. As an institute with a special focus on, and extensive experience in, agricultural research management, ISNAR has a strong comparative advantage in performing these roles, as well as in mobilizing contributions from other organizations. ISNAR's distinguishing features are listed in Box 1.

ISNAR's first 11 years

Since it began operations in 1980, ISNAR has advised some 50 developing countries on matters of agricultural research policy and management. In many instances, its relationship with a national system began with a detailed diagnosis of the system's strengths and weaknesses. This often led to an in-depth, long-term partnership in which ISNAR provided further assistance in formulating a plan to strengthen the system and in implementing specific changes. In recent years, ISNAR's diagnostic work has become increasingly collaborative, with national task forces playing a more active role in gathering the necessary information, analyzing it, and drafting recommendations.

Box 1. ISNAR's distinguishing features

ISNAR's mandate is to strengthen national agricultural research. ISNAR is the only center in the CGIAR system wholly dedicated to this task.

ISNAR is a service to national agricultural research systems. It responds to requests for assistance from developing countries. Working in partnership with national systems, ISNAR explicitly serves their needs and interests.

ISNAR's service is based on research and experience. Through its multidisciplinary research, ISNAR develops and adapts management technologies to improve the performance of national systems. Its advice to national systems is continually refined in the light of experience across a range of countries.

ISNAR learns from national systems. The institute consults national research leaders on their priorities and asks for feedback on its work. To ensure mutual learning and sharing of experiences, it works closely with national research managers in its research, training, and advisory activities.

ISNAR specializes in public-sector agricultural research management. The institute's expertise in this area is what distinguishes it from other management institutes, and constitutes its comparative advantage.

ISNAR is an international organization offering impartial advice. ISNAR's services are potentially available to all developing countries. The institute has no political interests and has the necessary autonomy to make impartial technical and policy recommendations.

With the implementation of the 1986 strategy, ISNAR's research activities expanded. This transformed the institute from a service relying largely on the experience of its senior staff members into one based increasingly on systematic research and the synthesis of experience -- both its own, and that of other organizations. At the same time, ISNAR's training efforts, fueled in part by its research output, increased substantially and focused more on developing management skills. ISNAR has now reached over 5000 national research managers and scientists through seminars, conferences, and workshops. The institute has also consolidated its role as an information service, providing publications on agricultural research policy and management for both national systems and the international development community.

Despite rapid growth since its foundation, ISNAR remains a small institute by CGIAR standards. Its core budget in 1992 amounted to US$ 6.6 million, while full-time professional international staff (irrespective of source of funds) numbered 44. The 1992 core budget represents a decline of 11% from the 1989 peak of US$ 7.46 million.

Building on experience: Lessons and observations

Experience gained during the implementation of ISNAR's 1986 strategy provides several lessons important for its new strategy for the 1990s:

- Comprehensive institutional development in national systems is an intensive, long-term process, often requiring continuing commitment on the part of ISNAR and its partners over a period of seven to ten years.

- Engaging senior national policymakers in the process of planning institutional development is vital to securing their support at the implementation stage. Decisions to introduce major changes, especially those in civil service organizations, often can only be taken at the senior policy-making level.

- As national systems have matured, and with the completion of broad diagnostic reviews and research plans in many of them, the nature of the requests for ISNAR's assistance has changed. Increasingly, national systems are asking for specialized advice and support for strengthening specific research policy and management components.

- ISNAR's traditional sequence of activities in assisting national systems -- initial diagnosis of system weaknesses and strengths, followed by support for planning and implementing improvements -- is well suited to the task of comprehensive institutional development. However, a more flexible approach is needed if ISNAR is to respond to the diverse demands of national systems of different sizes, resource endowments, and stages of development.

- Research is needed to reinforce the quality and relevance of ISNAR's service to national systems. Through applied research, ISNAR and its partners stay abreast of developments in national systems, anticipate future needs, and generate new management technologies. Through adaptive research, these technologies are tailored to national circumstances and the effects of their adoption monitored. Research is also required to synthesize national management experiences and to distill the lessons for institutional development that ISNAR and its partners have gleaned from their work.

- ISNAR's capacity to meet the demands of national systems, in both volume and range of services and products, is limited. The institute therefore needs to redefine its own areas of expertise and to increase its efforts to mobilize expertise from other sources where necessary.

- To broaden its impact on national systems, ISNAR needs to turn its knowledge and experience into management technologies that can be easily adopted with minimum support from ISNAR. It also needs to strengthen its capacity to work with others to disseminate the products it develops. This is crucial to achieving a multiplier effect for ISNAR's work.

- The quality of ISNAR's service to national systems depends not only on the competence of its staff but also on the close integration of its in-country advisory work with its training and research activities.

Agricultural research management: Some basic terms

The performance of an agricultural research system or part of a system (entity) is determined by its *effectiveness* and *efficiency*.

Effectiveness refers to the quality of research output, its relevance to users, and its ultimate contribution to agricultural development.

Efficiency refers to how well resources and knowledge are used to optimize research output.

An entity is any formally designated body with a role in the national research system. Some entities and their roles are described on page 7.

Institutional development is the process of improving the performance of an entity. The term can be applied to any kind of entity, or to a set of entities forming a system.

Institutional sustainability refers to the ability of an entity or system to maintain performance over time, implying the capacity to adapt to changing circumstances.

Management technologies are tools, methods, processes, and guidelines for improving the performance of an agricultural research entity or system.

Research policy components or management components are aspects or functions of a research system or entity identified as key leverage points for improving overall performance. A complete list of components is given in Box 4 (see Chapter 5).

Agriculture is broadly defined to include the production and management of crops, livestock, trees, fish, and other renewable resources, as well as certain post-harvest activities.

CHAPTER 2

THE CHANGING CONTEXT OF NATIONAL AGRICULTURAL RESEARCH

National agricultural research systems in developing countries are changing. So also is the environment -- political, economic, scientific, and institutional -- in which they operate. ISNAR must be responsive to these changes if its service to national systems is to remain relevant to their needs.

Concept of a national agricultural research system

> *A national agricultural research system comprises all a country's entities responsible for organizing, coordinating, or executing research that contributes explicitly to the development of its agriculture and the maintenance of its natural resource base.*

The essential functions of a national agricultural research system include:

- Defining research policies and objectives and setting priorities
- Mobilizing the resources required to meet objectives
- Organizing and coordinating various entities to carry out research
- Designing and executing research to meet agreed-on objectives
- Ensuring that research results reach technology users and other beneficiaries
- Monitoring and evaluating research outputs and impacts

By using the term *system,* ISNAR explicitly recognizes that national research involves a variety of entities. The term also suggests that these entities act, or ought to act, in concert to meet common goals within an overall national strategy for sustainable agricultural development.

Within a national system, the various entities responsible for research operate at different levels and fulfill different functions. At the policy level, for example, agricultural research councils or boards may formulate research policies and coordinate the activities of other entities without themselves executing research. At the operational level, the entities that conduct research and develop technologies are more diverse. They can be of public, private, or mixed character. They may be subject to different systems of governance, administration, financial support, and management. They range from ministerial departments and national research institutes, through quasi-private entities, such as nongovernmental organizations (NGOs) and research foundations, to fully private ventures, including domestic subsidiaries of multinational companies. And their mandates vary in scope from research focused on a single commodity, for example, to research on all relevant crops, livestock, forestry, and fisheries within a country or an agroecological zone or a province.

This institutional diversity is natural given the diversity of the agricultural sector itself in many developing countries, and the complexity of its research needs. Furthermore, national systems serve a diverse clientele, cover a broad research agenda, and are supported by a wide variety of partners.

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It is important to remember that, in contrast to developed countries, agricultural research in most developing countries is carried out largely by the public sector. The vital role of these public-sector research efforts can best be understood when they are viewed as the R&D section of the largest industry in many developing countries.

Current state of national systems

During the 1960s the need for science-based agriculture to fuel development, the absence of indigenous research capacities, and the early successes of the Green Revolution in Asia encouraged many developing countries and donors to invest in building strong national research systems. Since then, investment in public-sector research in developing countries has grown more than threefold, resulting in a marked expansion in infrastructure, trained staff, and research output. The number of researchers has quadrupled, their qualifications have improved significantly, and their experience has grown. Today many national systems are effectively serving their country's development goals and making important contributions to global scientific knowledge. They are building and maintaining ever-stronger links with international science; increasingly, they are also cooperating with each other.

Nevertheless, public-sector research in the developing world continues to face serious constraints. Financial resources have not kept pace with the growth in staff. Expenditures per researcher declined, sometimes precipitously, during the 1980s, particularly in Africa and Latin America. Limited funds for maintenance and equipment have undermined the returns to investments made in basic infrastructure (stations and buildings). In many countries, expanding salary budgets have absorbed the funds needed to cover operating costs, damaging scientists' productivity. Salaries and conditions of service have deteriorated, prompting the best scientists to seek better opportunities elsewhere. With the economic situation allowing little scope for increasing government funding, many systems, particularly those in Africa, continue to rely disproportionately on donors, making it difficult for them to set and pursue their own priorities, and to maintain research continuity.

The developing world's national agricultural research systems are not a single, homogenous group. They differ considerably in size and maturity, as well as in resource endowment and other characteristics. Smaller systems often experience special difficulties in meeting the broad range of demands placed on them. Mature systems -- those that have acquired the basic infrastructure for research and built a cadre of trained scientists -- tend to experience "second generation" problems concerned with the efficiency with which they use resources. The diversity of national systems has been compounded by their uneven development over the past decade, with the gap between efficient and effective national systems on the one hand, and those with serious problems on the other, widening rather than narrowing.

Future outlook for national systems

The challenge

During the 1990s, national research systems will face increasingly complex, diverse, and often competing demands. The major development objectives to which they will be required to contribute are to increase production for domestic use, to conserve natural resources, to alleviate poverty, and to expand exports.

Increase production for domestic use. With the population of developing countries growing by nearly a billion in the next decade, national systems will be under constant pressure to develop and maintain

technologies to meet the growing domestic demand for food, fiber, and energy. This pressure will be highest in sub-Saharan Africa, where the annual shortfall in food grains is expected to reach 17.5 million tonnes by the year 2000. Increasing urbanization and the renewal of economic growth in developing countries will further amplify demand and change its composition. Expected increases in global prices for cereals will constrain the import option for many developing countries.

Conserve natural resources. The combined assaults of population growth and economic progress on limited, and often very fragile, soil and water resources will increasingly threaten the sustainability of production systems in the developing world. Resource conservation problems have both a policy and a technology dimension; research will be expected to respond to both.

Both high- and low-potential areas will be at risk. Rising domestic food demand and the drive to increase exports will put the more favorable areas under stress. At the same time, governments will turn increasingly to the more diverse and complex rainfed environments to increase production. It will be possible to import some technologies from developed countries to protect the high-potential lands, but national systems are likely to have to generate for themselves the technologies needed to sustain production in the more vulnerable low-potential areas.

Responsibility for resource management research will fall largely on the shoulders of public-sector organizations. This type of research has limited attraction for the private sector. It is long-term in nature, uncertain in outcome, addresses social rather than profit objectives, and has results that are often not readily appropriable.

Alleviate poverty. Poverty will remain an overriding issue in technology development. Despite considerable economic growth in recent decades, more than 20% of the developing world's population is poor. Most of the poor live in rural areas, many in the more marginal environments. Many of the poorest are women and children.

National research systems, and public-sector research in particular, will be called upon to contribute to income generation and rural employment. The emphasis will be on technologies that the poor can afford, that reduce dependence on external inputs, and that are suited to the more marginal areas. Post-harvest and processing technologies that create jobs, minimize waste, and reduce the burden of physical labor, especially for women, are also likely to receive greater attention.

Expand exports. In many countries the goal of food self-sufficiency is likely to be replaced by food self-reliance during the 1990s. These countries will shift resources away from domestic food production to the production of selected commodities for export, enabling them to generate the foreign exchange needed to pay for food imports.

Success in developing export markets will depend heavily on the extent to which world trade is deregulated. The markets for many traditional export commodities have become highly competitive, increasing the demand on national systems for technologies to cut production costs as well as to improve product quality. Nontraditional exports offer promising opportunities to diversify, but these are small and volatile niches requiring a new flexibility on the part of research if they are to be successfully exploited. New skills and disciplines will be needed, especially in market analysis.

The response

Various factors will affect the ability of national systems to respond to the demands outlined above. They include global progress in science and technology, the policy environment in which national

systems operate, and the funds they receive. The increasing institutional complexity of national systems will diversify the sources of expertise that can be brought to bear on research problems, but will complicate the tasks of organizing, coordinating, and managing research. Initiatives at the regional level, as well as the changing approach of the international research centers, will also influence the development of national systems.

Progress in science and technology. The 1990s will witness advances in many areas relevant to national agricultural research in developing countries. Biotechnology will provide new opportunities in technology generation, sometimes with profound implications for agricultural production and trade. It will also transform research methods, offering opportunities for significant gains in the efficiency of research. New information technology will break through the barriers of isolation to link national systems with each other and with the global pool of scientific knowledge, reducing the duplication of research and facilitating the sharing of findings. Computer applications in the execution and management of research will expand dramatically, again with substantial opportunities for gains in research efficiency. Satellite-based technologies, geographic information systems, and other new tools and methods will facilitate research on resource management and land use.

National systems will have to change, sometimes radically, to exploit these new opportunities. Making use of advanced techniques implies hiring scientists from new disciplines and providing them with laboratories and equipment. It also implies developing new working relationships between the private and public sectors. Government research institutions will have to learn how to deal with patenting and intellectual property rights, to identify sources of genetic resources and other inputs into new technologies, and to find the funds for purchasing these. They will also need to take on additional regulatory responsibilities, possibly at the expense of their own research agenda. In addition, expanding research on resource management will require new ways of organizing research, setting priorities, designing research programs, and fostering multidisciplinary teamwork.

Policy environment. During the 1990s, national systems will need to develop stronger links with policymakers and their advisors. There are three major reasons for this. First, in an uncertain world, information to assist decision making will become an increasingly valuable output of the research system. The drive to increase exports, for example, will increase the need for dialogue between researchers and policymakers to ensure that comparative advantages in production are correctly identified. As the pressure on natural resources grows, so also will the risk of environmental degradation if the wrong choices regarding land use are made. Never before has it been so important for national research leaders to be able to advise policymakers on the consequences of their decisions.

Second, the adoption of new technology will continue to depend not only on strong extension services but also on a conducive policy environment. In particular, technology to conserve the resource base will not be adopted by farmers unless it is to their economic advantage. The organizations that generate and disseminate technology will need to consult with policymakers to devise appropriate policy measures, lobby for their application, and report on their effectiveness.

Third, the flow of funds and other forms of support to national agricultural research systems depends critically on the backing of senior policymakers. Research managers will need to keep this group well informed about the achievements and problems of research to ensure continuing support through a further decade of structural adjustment.

Funding scenario. Funding will be the central concern for public-sector research during the 1990s. After several decades of growth, many public-sector research institutions are now being forced to contract. National treasuries will be hard pressed to increase support for research, given basic constraints in domestic economies, the continuing debt crisis affecting many countries, the exigencies

of structural adjustment, and the competing demands for public investment in other social services such as health and education. As a result, national systems will face the utmost difficulty in recruiting and retaining the highly qualified scientists needed to carry out essential research tasks. Indeed, many systems will be compelled to cut back on staff in order to bring salary and operating costs into balance. Funding constraints will coincide with demands to take on additional and more complex research tasks, squeezing systems still further.

Donors are unlikely to increase their contributions to make good these shortfalls. Eastern Europe and the independent states of the former Soviet Union are likely to attract funds away from developing countries for much of the coming decade. Donor funding for both international and national public-sector research has plateaued and, in some instances, already declined. In any case, many developing countries are already overly dependent on external funding. Difficulties in demonstrating the impact of investments in research, as well as frustration with the apparently low level of commitment of some countries to research, are leading some donors to explore new institutional models for strengthening research. These include investment in private-sector research, NGOs, and regional initiatives.

The stark funding scenario underscores the urgent need for national systems to become more efficient. It also calls for a creative search for alternative funding mechanisms and sources. To maintain the commitment of governments and donors, research institutions will have to be able to assess and demonstrate impact. This will become more difficult as the easier research problems are solved and the more intractable ones of natural resource management and of boosting productivity on marginal lands move to the top of the research agenda.

Institutional complexity. The number of different actors within national systems is growing and will continue to grow throughout the 1990s. This is a response to the broadening scope and increasing complexity of research, as well as the trend in donor funding outlined above.

Universities will increasingly be called upon to participate in research for development, particularly in the new fields of biotechnology and natural resource management. Joint public-private ventures will expand as developing countries strive to take advantage of new export niches and commercial opportunities. Private companies, research foundations, NGOs, development organizations, and producer groups will increasingly conduct R&D on specific problems or for specific client groups. With the spread of democratic pluralism and growing emphasis on decentralization and participation, research and technology development will come under increasing pressure to move still closer to the village level, as farmer groups, community organizations, and NGOs demand a larger role in shaping the research agenda and conducting adaptive research.

Harnessing the resources represented by these diverse research entities will require renewed emphasis on building strong and coherent national research systems. New types of partnership will have to be forged. New mechanisms will be needed for determining research priorities, sharing responsibilities according to comparative advantage, allocating resources among competing groups, and linking to actors beyond the research system.

Within these more complex national systems, government research organizations will continue to play a pivotal role. While the execution of research may increasingly be shared with different types of entity, the mission and direction of the system, as well as the regulation of its products and services, must be set by government if research is to serve as an effective instrument of development. Government organizations will continue to have special responsibilities, particularly for those types of national research that the private sector cannot supply. These include the generation of technology

directed towards the needs of the poor, and long-term, location-specific research to conserve natural resources.

Developments at the regional level. Research at the regional level -- in the form of networks, regional programs linking research institutes, and full-scale regional organizations -- has been promoted strongly in recent years. This trend is likely to continue in the 1990s. To the extent that these initiatives lead to a stronger flow of information among countries, better coordination of resources, and a more efficient division of labor, national systems stand to benefit. There is a danger, however, that regional entities will be developed at the expense of national ones, siphoning off external funding, capturing their best scientists, and demanding a growing share of national research budgets. It will be imperative for national systems to formulate effective strategies for working with regional entities. They will need to concentrate their efforts in areas of comparative advantage, leaving research in other areas to be covered under a networking approach. They will also need to ensure that regional entities remain accountable to them, and ultimately to the farmers and consumers in their countries.

The changing CGIAR emphasis. The CGIAR is only one of many actors in the global research system, but its influence on national research surpasses its share of global research expenditures. The CGIAR's new strategy has important implications for national agricultural research systems. The emphasis on natural resource management and the development of ecoregional entities may act as a catalyst for similar developments in national systems. Ecoregional entities have the potential to strengthen regional cooperation by improving and simplifying the links between the international centers and national programs. However, as in the case of other regional initiatives, it will be important to ensure that they do not compete with national systems, and that they remain accountable to them.

Implications for institutional development in national systems

The trends discussed above have profound implications for institutional development in national research systems. Those that have shaped the ISNAR strategy most prominently are summarized below:

- The institutional make-up of national systems will become more complex, with new actors filling specific niches and current actors, such as universities, taking on new research responsibilities.

  Implication: The task of strengthening national research systems must be broadened to include these diverse entities and the interactions among them. Sound system design and structure will be crucial to the productivity of national systems in the coming years.

- Government research organizations will need to serve as the core of the national system around which other research and technology development entities can coalesce to serve national development goals.

  Implication: Government research organizations will need to be further strengthened if they are to play this central role. New coordination mechanisms will also be needed.

- To address the complex challenges of the coming decade, national systems will be expected not only to generate relevant technologies but also to provide information to policymakers to help them make better-informed decisions.

Implication: Developing effective links between research and development policy will take on added urgency.

- Growth in traditional sources of funding for public-sector research institutions will be minimal or nonexistent.

  Implication: Greater efficiency in the mix and use of resources will be essential to ensure institutional sustainability and enhance institutional performance. National systems will need to develop alternative sources of funding.

- Given the urgency, scope, and complexity of the demands placed on them, national systems will have to ensure that their research programs are focused on clearly defined objectives, respond to the needs of end users, and are executed efficiently.

  Implication: National systems will have to strengthen their capacities in program formulation, priority setting, and the monitoring of research. Impact will have to be more systematically evaluated. Strong links with technology developers and different categories of users will be needed to ensure the relevance of research and the dissemination of its results. Farmer participation in setting the research agenda will need to be encouraged.

- Rapid advances in information and computer technologies will continue to offer major opportunities for improving the management of scientific information, as well as that of research resources in general.

  Implication: National systems will need to stay abreast of these technological advances, and to acquire the skills and equipment needed to apply them successfully to their circumstances.

- The development of international and regional agricultural research has increased, not decreased, the need for strong national systems.

  Implication: Innovative arrangements will be needed to ensure that regional and national research efforts reinforce rather that compete with each other.

In summary, strong national research systems are more than ever needed to serve as the engines of sustainable agricultural growth in developing countries. In the coming years these systems will need to become more effective and efficient as they strive to take on new and more complex tasks under what, for many, will be severe funding constraints. This conclusion forms the basis of ISNAR's strategy for the 1990s.

CHAPTER 3

STRATEGIC DIRECTIONS AND THEMES

Based on its analysis of past experience and future needs, ISNAR has defined five major strategic directions and three major themes to guide the development and execution of its services and programs through the 1990s. These are summarized in Box 2.

Box 2. Major strategic directions and themes

Directions

- Target services to the needs of national systems at varying stages of development
- Cover a wider range of research entities
- Strengthen work on research policy
- Forge strategic alliances with other organizations
- Seek multipliers for increased impact

Themes

- Institutional sustainability
- Assessment of institutional performance
- Implications of research on natural resource management

Directions

Target services

In response to the changing needs of national systems at varying stages of development, ISNAR will reduce its commitment to comprehensive institutional development through one-on-one relationships with individual countries. This will free resources for a more flexible and cost-effective service of shorter duration, geared to strengthening specific management components across systems in different countries. ISNAR will also step up its efforts to generate and disseminate knowledge and information in appropriate forms geared to the needs of more clearly defined audiences. These three types of service are described in further detail in Chapter 4.

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Cover a wider range of research entities

In response to the growing institutional diversity of national systems, ISNAR will work with a wider range of research entities. It will also put more emphasis on advising countries how to develop system-level agricultural research policies and effective links among entities.

Strengthen work on research policy

ISNAR will strengthen its work on research policy in three ways. First, it will contribute to the global policy dialogue on national agricultural research by providing basic information on the development of national systems and their changing role in the global research system. Second, it will strengthen its capacity to advise national research leaders on how to forge stronger links with policymakers and their advisors. Third, in its collaborative efforts in comprehensive institutional development, it will strive to work more closely with national policymakers.

Forge strategic alliances

The breadth of ISNAR's mandate far exceeds its size and delivery capacity. As a small institution, ISNAR cannot develop expertise in all areas of research management. It will therefore intensify its efforts to forge alliances with organizations having expertise that complements its own. These will include management training and consulting institutes, as well as universities, development organizations, other international research centers, and advanced research organizations in developed or developing countries. ISNAR will collaborate actively with these organizations in research, training, and product development and delivery.

Seek multipliers for increased impact

ISNAR cannot directly serve all national research systems. With a renewed commitment to strengthening its outreach and impact, the institute will intensify its efforts to develop multipliers for its work. It will continue to produce tools, guidelines, and training modules for use by national systems or by other organizations that provide technical assistance or training. It will foster the exchange of management expertise and innovations among developing countries through seminars, publications, and cross-country consultancies. Through its collaboration in research and training, it will expand its "invisible college" of individuals who can be called on to strengthen its delivery capacity. And it will work with national systems to provide technical inputs into the design of donor-funded projects supporting institutional development.

Themes

Three major themes emerge from the analysis of the changing context of national agricultural research presented in Chapter 2. These are:

Institutional sustainability

How to sustain performance when the potential to increase funding is limited and the demands placed on the system are growing will be the single greatest challenge facing national systems during the 1990s. This issue will be particularly critical for public-sector research organizations, which will experience increasing staffing difficulties.

Assessment of institutional performance

National policymakers and donors are pressing national systems to demonstrate impact. This pressure is likely to grow stronger through the 1990s as alternative investments continue to compete with agricultural research for reduced amounts of public-sector funding. National systems will need new approaches, tools, and mechanisms to address the complex task of assessing their performance.

Institutional implications of research on natural resource management

National systems are likely to become increasingly involved in this type of research. They will need guidelines on how to integrate, organize, and manage it effectively. The integration of national efforts with new regional initiatives will require careful consideration. The policy, organizational, and management implications of strengthening research in this area will need to be analyzed and synthesized.

These concerns will underlie and unite the future work of ISNAR, which is presented in the chapters that follow.

CHAPTER 4

ISNAR'S SERVICES

ISNAR strengthens national agricultural research systems through three types of service:

- **Comprehensive institutional development.** For a selected group of countries, ISNAR provides comprehensive, long-term advice and support to help them strengthen their overall national research system as well as specific core institutions within it.

- **Strengthening research policy and management components.** For a wider range of national research systems and entities, ISNAR provides more focused, shorter-term support for strengthening specific policy and management components identified as key to improving overall performance.

- **Generation and dissemination of knowledge and information.** For a still wider clientele, including both national systems and the larger research and development community that supports them, ISNAR provides knowledge and information on national systems, agricultural research policies and management, and institutional development.

These services yield different outputs, but complement and reinforce each other. They vary in scope, in the breadth of clients covered, and in the mode of collaboration used (see Table 1). ISNAR selects from among these services to respond to the varying needs and interests of different client groups. The three services are described in more detail below.

Comprehensive institutional development

Providing developing countries with comprehensive, long-term support for improving their agricultural research systems and core institutions has so far been ISNAR's main area of expertise and concentrated effort. During the 1990s this service will be more sharply targeted to address the needs of medium-sized systems in the early stages of development or undergoing major reform. Given the demands placed on ISNAR's limited resources, special funding will need to be secured and fewer than ten such systems will be covered at any one time.

In these partnerships, ISNAR, national policymakers, and research leaders jointly develop a long-term program of work with clearly defined objectives and milestones for assessing progress. Working both with the system as a whole and with its core organizations, ISNAR makes a commitment to collaborate throughout the change process. It helps the system to diagnose its strengths and weaknesses, plan the process of institutional development, and implement and monitor the required changes (see Box 3). ISNAR is pro-active in highlighting areas where change is necessary or desirable.

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Table 1: Key Features of ISNAR's Services

Type of Service	Key Objectives	Client Groups	Nature of Involvement
Comprehensive institutional development	• Develop effective and efficient national research systems and core institutions • Improve understanding of institutional development	*Primary:* Medium-sized systems in early stages of development or undergoing major reform *Secondary:* Donors and technical assistance agencies	*Direct* • Long-term support for all necessary management components • Service to individual countries through one-on-one relationships
Strengthening research policy and management components	• Strengthen key policy and management components to improve overall performance • Generate improved policy and management tools and guidelines • Reach a wider range of partners	*Primary:* Wide range of systems seeking improved performance *Secondary:* Development and training community	*Direct* • Short-term support in specific areas • Service to groups of countries sharing common problems
Generation and dissemination of knowledge and information	• Create a more favorable policy environment for national research • Spread new knowledge on agricultural research management • Promote the exchange of experience	*Primary:* National policymakers and managers, and development community *Secondary:* Global research and training community	*Indirect* • Broad but targeted dissemination

Box 3. Sequence of activities for partnerships in comprehensive institutional development

Diagnosis

- Assessing the policy environment, together with the current performance of the system and its core institutions
- Diagnosing key constraints and identifying leverage points
- Preparing options for decision making

Planning

- Designing the future system and/or its core institutions
- Planning and prioritizing the steps needed to bring about the desired changes

Implementation

- Supporting implementation and monitoring the changes
- Evaluating the outcome and extracting lessons

ISNAR's approach to this service is holistic, covering the full range of research policy and management components considered critical for sustained improvements in performance. ISNAR works with the national system directly and assists it in bringing in outside expertise as required.

Building a coherent national research system and marshalling the resources required to sustain it is a long-term process of incremental change. Political and economic instability, changes in leadership, and shifts in national or donor policies can disrupt or even derail the process. ISNAR therefore stresses continuity, responsiveness, and flexibility in this service.

Recognizing that there is no standard approach to institutional development, ISNAR tailors this service to the needs of individual systems. A multidisciplinary team approach is used to marshall the expertise needed to address each system's constraints and opportunities. Closely linked with ISNAR's advisory support is a long-term training program, defined jointly by ISNAR and national research leaders. Periodic training throughout the change process helps research managers to gain the knowledge and skills needed to analyze constraints and to plan and implement improvements.

Within the target group identified for this service, ISNAR strives to maintain a diversified portfolio of systems so that it can learn from a range of experiences and transfer these across countries and regions. ISNAR's response to requests for this service is guided by considerations of effectiveness, efficiency, and equity (see Chapter 7).

Although the immediate output from this service is largely for the partner system's exclusive benefit, the experience ISNAR gains upgrades its capacity to advise other national systems. ISNAR monitors the change process and periodically synthesizes the lessons emerging from its experiences across a range of countries. These are relevant for other national leaders guiding their systems through change, as well as for other organizations supporting institutional development in national systems. Feedback from these intensive partnerships also serves as a vital input into the setting of priorities for research and training activities.

Strengthening research policy and management components

This shorter-term service, available to a wider range of national systems, is a response to the shift in demand within national systems towards more specialized support. It targets those countries which have a functioning system and core research institutions in place, but wish to reinforce specific research policy or management components to improve overall performance. This service, which has been developed since 1986, is closely associated with ISNAR's increased research capacity. It is carried out in close collaboration with national managers and scientists, and often includes an important product development and testing element.

The kind of support ISNAR provides under this service varies with the component, the stage of development of the national system, and its resource endowment. It may include advising research leaders embarking on strategic planning exercises or seeking to improve links with technology users. It may also include helping managers to develop a new approach to program budgeting, or to adopt an existing tool for planning and managing human resources. Or it may involve organizing a training course at regional level, designed to strengthen skills in areas such as leadership or the monitoring and evaluation of research. Research policy and management components are described in Chapter 5.

On receiving a request for assistance, ISNAR first works with the national research managers concerned to determine whether the identified component is indeed critical to improving overall performance. If it is, ISNAR then helps them review options and design interventions. For components in which it has expertise, it collaborates in the testing of improved approaches and techniques and their adaptation to local conditions. For components in which it does not have expertise, it may work with national research managers or others to develop improved approaches. These are then available for testing or adapting in other countries, including those receiving ISNAR's comprehensive, long-term service. In both cases, the introduction of new tools is followed by training or product support as necessary.

ISNAR often works with groups of countries requesting its technical support to improve the same component. This ensures more efficient use of its resources, makes for easier learning, and promotes stronger links among participating national research managers and scientists. These informal networks, which are often organized on a regional basis, are a cost-effective way of including small national systems in component strengthening. The needs of smaller systems therefore receive special attention as part of this service. Larger, more mature national systems are also included, enabling other participants to learn from their experience. Larger systems can make a valuable contribution to product development, especially in the case of components on which little work has been done in the past.

In some cases, ISNAR works through regional organizations to advise and train national research managers. This approach is also used to collaborate with the other international centers of the CGIAR system in their efforts to support national systems. This type of collaboration can strengthen ISNAR's outreach and multiply its impact.

Generation and dissemination of knowledge and information

This service, directed both at national systems and at the wider development and scientific community, is designed to provide multipliers for ISNAR's work. Through it, ISNAR generates and disseminates up-to-date information about national agricultural research systems and about selected aspects of agricultural research policy and management.

The service has three basic objectives. The first is to create a more favorable policy environment for national research. To achieve this objective, ISNAR provides knowledge and information on the state of national systems and on selected strategic issues confronting them. It maintains and updates databases on key quantitative indicators, including their financial and human resources. These data are used to identify trends and emerging issues, such as the increasing imbalance between personnel and operating funds, and to underpin more extensive research policy analysis. The information produced is packaged and disseminated to policymakers and to the wider development community to keep them informed about the state of national systems and to reinforce their support for them. The data also provide comparative analyses for use by national research leaders in lobbying their governments for more realistic policies and increased support for research.

In addition to such quantitative analyses, ISNAR generates information on selected strategic issues with major policy implications for national research. Examples of the topics covered include integrating new technical or scientific areas, such as biotechnology; responding to new concerns, such as natural resource management; or coping with new institutional constraints, such as funding cutbacks. On such topics, ISNAR carries out special studies, prepares briefing or policy papers, and organizes meetings to bring national leaders and other experts together to analyze issues in more depth. Through these efforts ISNAR makes a major contribution to the policy dialogue on issues critical to national systems and their development.

The second objective of this service is to spread new knowledge related to agricultural research management, so that this reaches the many research managers and scientists with whom ISNAR cannot work directly. To achieve this objective, ISNAR customizes, packages, and disseminates new information products for use by different audiences. These products may take the form of research publications or of more practical, extension-type materials, such as guideline papers, manuals, and computer-based management tools. In selected topics relevant to a large number of national systems, ISNAR also provides stand-alone training materials. These can be used by national research or management training institutions, or by other organizations that help strengthen national research through training activities. In some cases ISNAR organizes courses to train trainers in the use of these materials.

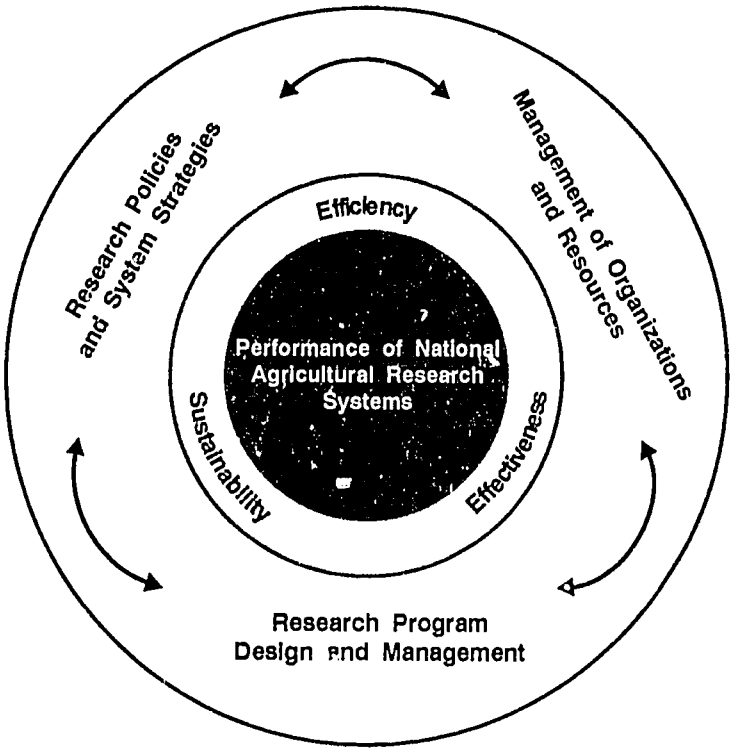
The third objective is to provide fora for the exchange of experience among research leaders. To achieve this objective, ISNAR organizes and participates in seminars, workshops, and conferences. Often organized regionally in collaboration with other organizations, these meetings act as important multipliers of ISNAR's work.

CHAPTER 5

ISNAR'S PROGRAM

ISNAR's program is divided into three broad areas, or facets, of agricultural research management. The first addresses macro-level concerns of research policy and strategies for system development. The second focuses on the management of research itself. The third encompasses the organizational environment in which research is carried out. These three areas together determine the performance of national research -- its sustainability, its effectiveness, and its efficiency (Figure 1).

Figure 1: Three facets of agricultural research management



Each area contains a cluster of research management components. ISNAR's experience has shown these components to be the essential building blocks of comprehensive institutional development (Box 4). All the components are covered in diagnostic reviews of national systems and in national research plans. Interventions, however, usually focus on specific components identified as leverage points for improving overall performance, as discussed in the previous chapter.

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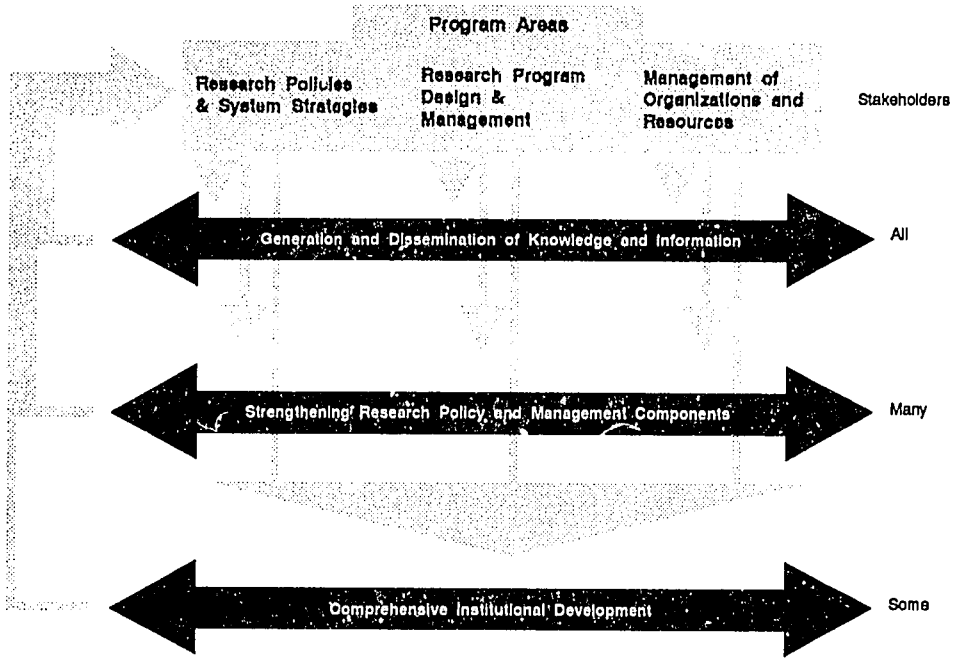
Within each program area ISNAR:

- Carries out research to generate new knowledge, develop or adapt appropriate management technologies, and synthesize experience across national systems
- Provides technical advice and support to national organizations for institutional development and for strengthening specific research policy and management components
- Delivers training and develops and tests materials designed to reinforce research managers' and scientists' understanding and skills
- Disseminates knowledge and information gained through research and advisory work with national systems

In sum, the work in each program area generates the inputs for ISNAR's three services. In turn, work carried out through the services feeds back information on users' needs and experiences (Figure 2).

Figure 2: Integration of services and program areas



Box 4. Program areas and management components

Research Policies and System Strategies

- Global and regional cooperation
- Links between development policies and research
- Science and technology policy for research
- Strategic planning
- System-level priority setting and evaluation
- System design and structure
- Mobilizing resources for research

Research Program Design and Management

- Research program organization
- Program formulation, priority setting, and budgeting
- Links with external sources of knowledge and technologies
- Management of scientific information
- Links between research, technology development, and users
- Monitoring and evaluation of research

Management of Organizations and Resources

- Leadership and guiding values
- Accountability and governance
- Assessment of organizational performance
- Development and management of resources for research
- Information systems and communications
- Organization and management of operations and support services

The relative importance of the three program areas and the balance of resources allocated to them can be expected to change over time. Within program areas, new research management components may be included and others may subside. Similarly, the balance between research, advisory work, training, and information dissemination may also vary. Shifts in emphasis will reflect the changing needs of national systems, ISNAR's accumulated knowledge and experience, the contributions of other organizations, and the resources available.

Due to limited staff and funds, ISNAR must select its areas of concentration for developing knowledge and tools very carefully. At any one time it can work actively on only a small number of management components. Important considerations in selecting program priorities are outlined in Chapter 7.

The following sections describe the objective of work in each program area, its primary clients, ISNAR's approach, the types of organization with which ISNAR collaborates when working in the area, and the broad priorities for the 1990s.

Research policies and system strategies

Objective

The objective of work in this program area is to help policymakers and research leaders define the mission and goals of their research system, design its structure, plan its development, and set macro-level priorities in line with national development objectives.

Clients

The primary clients are national policymakers and research leaders. Donors and technical assistance agencies that support the development of national systems are secondary clients, with an important role to play in multiplying the effects of ISNAR's work.

Approach

Work in this program area addresses the basic characteristics of a national system and the support available for its development. The components covered include global and regional cooperation, links between development policies and research, science and technology policy for research, strategic planning, system-level priority setting and evaluation, system design and structure, and mobilizing resources for research.

Global and regional cooperation. The performance of a national research system can be considerably enhanced through its participation in related global and regional research efforts. Relationships with the international agricultural research centers, regional organizations, development agencies, and advanced research institutes can bring important gains in research efficiency and quality, but need to be clearly defined and well managed to ensure that national systems benefit as intended. Smaller national systems stand to gain substantially through global and regional cooperation, but must be careful not to overextend themselves by taking on too many collaborative relationships. The appropriate division of labor between the various partners in the global research system will remain an important issue for national systems during the 1990s, especially as research objectives become more complex and resources more scarce. Cooperation at the regional level, in particular, is expected to grow.

Links between development policies and research. Improving the flow of information between policymakers and research will be vital in the uncertain world of the 1990s. Increasingly, research will be called upon to provide technical inputs into decision making on difficult natural resource use and other policy issues. Research leaders and managers will turn to policymakers for support in limiting the negative effects of structural adjustment on system performance, and for implementing major reforms, especially those relating to conditions of service or involving the reorientation of existing programs. Better links with policymakers will help secure a more favorable climate for change, for improving the performance of research, and for planning and implementing more effective development policies.

Science and technology policy for research. Several areas of science and technology raise serious policy issues for agricultural research. Many countries are seeking advice in the area of biotechnology, where cost-effective approaches are needed that avoid domination by the private sector. Advice on the need for biosafety mechanisms and how to establish them is also much in demand. Last, the area of biodiversity raises complex policy and regulatory issues relating to the effectiveness and efficiency of conservation, including the patenting of indigenous germplasm. These and other issues will continue to merit attention as national systems seek to take advantage of further progress in science and technology.

Strategic planning. Overall planning for system development involves identifying the broad priorities for research, designing a system structured to address those priorities, and securing the resources required to sustain it. By shaping its own future through strategic planning, a system builds consensus on its objectives, fosters commitment to change, and enlists the support of policymakers

and donors. Strategic planning exercises are particularly useful for systems facing funding constraints because of the pressure they exert to make the most efficient and effective use of limited resources. Increasingly used by national systems during the 1980s, strategic planning will remain an important tool for institutional development over the next decade.

System-level priority setting and evaluation. Formal approaches to priority setting are increasingly in demand from national systems seeking to ensure that scarce research resources are allocated so as to achieve maximum pay-off in line with national development objectives. With increasing pressure for accountability and impact, the ability of a research system to evaluate its performance will be critical to continued funding and support, and hence to institutional sustainability. For both priority setting and evaluation, a range of tools and processes to suit the needs of systems at different stages of development is needed. Integrating concerns for resource conservation into the models used poses a special challenge, given the difficulties of determining the effects of interventions in this area. Integral to strategic planning exercises, priority setting and evaluation at system level will continue to be important tasks for research leaders and policymakers for the foreseeable future.

System design and structure. Given the diversity of entities participating in research, policymakers will continue to seek guidance in designing a suitable structure for the research system -- one that optimizes the contributions made by each actor and facilitates the coordination of their efforts. It will be important to define the comparative advantages of different types of entity for different types of research, as well as the appropriate mechanisms for linking their activities. With resources becoming more limited, decisions on the scope of research to be covered by the public sector, and on the size of public-sector organizations, will become more sensitive. Opportunities will need to be examined for redistributing to other actors in the system some of the tasks conventionally carried out by ministries and public-sector research institutes.

Mobilizing resources for research. This will be a key issue for the 1990s, as national systems face increasing funding constraints. Securing continuity of funding from traditional sources -- donors, development agencies, and national governments -- will increasingly be linked to the ability to produce convincing strategic plans and evidence of past impact. In addition, managers will need to be creative in seeking alternative funding sources and in developing appropriate mechanisms to tap them. Options to explore include the sale of selected research products and services, partial funding from producers' associations, joint ventures with the private sector, and private-sector investment in public-sector research. Guidelines on the advantages and disadvantages of each will be needed.

Allies

In this program area, ISNAR collaborates with universities, policy research institutes, and financial and economic planning bodies at the national, regional, and international levels. ISNAR will continue to be a lead player in system design and structure, an area in which few other organizations have so far developed expertise. In much of its policy work, however, it will seek to harness the expertise of the many other actors already at work in this field.

Future trends

During the 1990s ISNAR's work in this program area will increase. Priority will be given to helping developing countries cultivate policy support and develop new mechanisms for mobilizing resources. ISNAR will also emphasize system design and structure, enabling national systems to harness the contribution of new actors on the research scene -- private-sector firms, research foundations, and

NGOs. ISNAR will strengthen its capacity to advise national systems on the appropriate division of labor between national, regional, and international research efforts, with special attention to the problems faced by small countries. Last, the institute will continue to refine its methods for system diagnosis and planning, seeking to package these in ways that will enable others to use them with less direct support from ISNAR.

Research program design and management

Objective

The objective of work in this program area is to help national research systems develop well-focused, high-quality research programs that address users' needs and generate relevant knowledge and technologies.

Clients

The primary clients are national research directors, program leaders, and scientists with managerial responsibilities. Scientists and trainers in international agricultural research centers and regional organizations are important secondary clients, as also are technical assistance staff from development agencies.

Approach

Work in this program area addresses the "engine room" of a national system -- its research programs and their effectiveness. The components covered include research program organization; program formulation, priority setting, and budgeting; links to external sources of knowledge and technologies; the management of scientific information; links between research, technology development, and users; and monitoring and evaluation of research.

Research program organization. Whether programs are organized by discipline, commodity, agro-ecological zone, or by some other category is a key determinant of their performance. ISNAR's experience shows that no single model is ideal under all conditions, the appropriate choice depending largely on institutional mandate, research objectives, and the specific conditions under which the program must operate. Selecting the right organizational model will become increasingly important as research systems tackle the difficult tasks of integrating new areas of work, such as biotechnology and natural resource management research, and of responding to the increasing demand for decentralized, participatory research.

Program formulation, priority setting, and budgeting. These three tasks are essential to ensuring that research is demand driven and of high quality. Together, they form the process by which users' needs are identified and translated into research priorities, objectives, and activities, with resources being allocated accordingly. They also form the basis for planning the development of program resources to achieve critical mass. The process involves long-term planning of the research program, the design and approval of research projects, and the annual budgeting exercise, the latter being used to tie resources to specific activities and to make interim adjustments where necessary. During the 1990s the demand for greater accountability and transparency in research will increase the pressure on national systems to develop a sound approach in these areas.

Links with external sources of knowledge and technologies. Rapid developments in world science, coupled with limited research capacity in many countries, make it all the more urgent for research programs to strengthen their links with external sources of knowledge and technologies. Recent progress in computer and communications technology makes the improvement of these links a promising leverage point for improving both the effectiveness and the efficiency of national research.

Management of scientific information. The ability of a research program to manage the information it gathers is an important determinant of its effectiveness. Appropriate procedures and mechanisms for accessing, processing, producing, and disseminating information need to be put in place. The tasks of synthesizing research findings and packaging them in forms tailored to the requirements of different users need to be addressed. New skills may be required to make the best use of new or existing information facilities and equipment. As information becomes an increasingly valuable output of the research system, the need for improvements in this area will grow.

Links between research, technology development, and users. No less vital for the effectiveness of a research program are strong links between research, technology development, and users. Such links ensure the relevance of research to users' needs, as well as the dissemination of its results. Forging effective links is becoming more difficult, however. Many traditional extension services are in crisis, and new types of organization (NGOs, producer groups, etc.) are emerging to take on some of their activities. In addition, research is increasingly being aimed at more marginal areas, where farmers are harder to reach and production systems are more diverse.

Monitoring and evaluation of research. These tasks are essential to maintaining the quality and relevance of research, yet they constitute an area of research management that has been somewhat neglected in the past. Annual reviews are the mechanism most commonly used, but are often not very effective. Where monitoring and evaluation exercises are carried out, their results are seldom fed back into the research planning process. As the competition for resources intensifies, research managers will be under pressure to introduce more rigorous methods for monitoring and evaluation, which will increasingly be seen as essential to continued support and hence to institutional sustainability.

Allies

The design and management of agricultural research programs in developing countries is an area addressed by few organizations other than ISNAR. In this program area the institute is therefore less able to borrow expertise and technology from elsewhere than it is in its other two program areas. In the fields of program organization and formulation, ISNAR seeks to mobilize the scientific expertise of a range of institutions, including the international agricultural research centers. It also seeks to draw on the experiences of advanced research systems in both developed and developing countries.

Future trends

In this program area ISNAR will give priority to developing improved methods and processes for monitoring and evaluating research. Priority will also be given to providing advice in the rapidly evolving areas of developing links with external sources of knowledge and managing scientific information. Recognizing that national systems will increasingly be called upon to address resource management and conservation issues, ISNAR will give special attention to examining the implications of this expansion of the research agenda for research program organization and management. Last,

ISNAR will consolidate its work on linkages between research and technology users, and on program formulation and priority setting, with special attention to the role of farmers and their organizations in setting the research agenda.

Management of organizations and resources

Objective

The objective of work in this program area is to help developing countries create sustainable research organizations that provide a supportive environment for research, optimize the use of their resources, and are accountable to their stakeholders.

Clients

The clients are the directors, managers, and administrators of national research organizations.

Approach

Work in this program area addresses the support provided to research programs from their immediate organizational environment, with special emphasis on the efficiency with which resources are used. The components covered include leadership and guiding values; accountability and governance; assessment of organizational performance; development and management of resources for research; information systems and communications; and organization and management of operations and support services.

Leadership and guiding values. Management based on control is seldom conducive to productive research. Strong leadership and clear guiding values are needed to create an organizational culture which promotes excellence in research, commitment to organizational goals, and responsiveness to colleagues and clients. This is particularly true in public-sector research organizations, where the financial incentives for good performance may be lacking. This component will become increasingly important as research organizations seek to accommodate the demands of diverse interest groups and to adapt to a more volatile policy environment. Under these conditions, the ability to manage change will become an especially valuable leadership skill.

Accountability and governance. These are growing concerns within public-sector research organizations. The mixed record of success and failure, coupled with increasingly constrained funding, has led both national policymakers and donors to demand more explicit measures of impact and evidence of sound management. Accountability starts with a clear mandate, effective governing bodies, and appropriate external control mechanisms. The internal structure and processes of an organization, which must be sufficiently transparent, are further important determinants. The effect of governance on the performance of an organization depends on a variety of factors, including the structure and composition of the governing body, its links with management, and the powers vested in it.

Assessment of organizational performance. Closely linked with the issue of accountability is the assessment of organizational performance -- an area in which little work has so far been done in public-sector institutions. Assessing overall performance entails gauging not only the ultimate impact

of an organization on its client and target groups, but also its progress in institutional development. Developing appropriate assessment criteria will become more problematic as research becomes more complex. For public-sector institutions, continued support from government and donors is likely to be increasingly linked to the assessment of performance, which will therefore become critical for institutional sustainability.

Development and management of resources for research. As funding grows more limited, efficiency in resource use will become crucial for national systems. Improved structures, tools, and processes will be needed for planning, developing, and managing the human, financial, and physical resources required for research. Many national systems will need to reduce staff and facilities in order to free up funds for operating expenses. Under these conditions, special attention will need to be paid to creating incentive and reward structures that will help motivate and retain good staff. Other issues requiring attention include the introduction of software and systems to improve financial management, and the development of research stations, facilities, and equipment to reflect the more complex research needs of the 1990s, including the conservation of natural resources. The planning and management of resources for research is closely linked to that of programs, with the result that the two must be closely integrated.

Information systems and communications. Rapid advances in information technology will provide important opportunities for improving the productivity and efficiency of research in three areas: the accessing and storing of scientific information, the packaging and dissemination of research results for different types of users, and the management of information on the allocation, use, and status of resources in relation to research activities. Managers will need to take full advantage of these technological advances to improve the facilities that support research and to optimize efficiency in resource use.

Organization and management of operations and support services. This component can be an important leverage point for improving research productivity and innovation. Scientists need a work environment that minimizes bureaucratic entanglements, provides adequate facilities and equipment, furnishes timely and reliable support services and resources, and permits the necessary flexibility and autonomy to foster creativity. Creating these conditions in public-sector research institutions, particularly in civil-service structures, will pose unique challenges in the difficult economic climate of the 1990s.

Allies

In this program area, ISNAR seeks to harness other sources of expertise, including institutes of management and public administration. In some aspects of financial or physical resource management, the institute tends to borrow and adapt approaches and tools rather than to develop its own. ISNAR draws largely on national experts to work on administrative issues, since this is an area of management that is highly influenced by the sociocultural setting of an organization.

Future trends

ISNAR's work in this program area will continue to emphasize the development and management of human resources, seen as an area of major concern given increasing funding constraints. In addition, ISNAR will give priority to helping national research systems to exploit advances in computer and information technologies. Considerable attention will also be paid to developing management technologies for evaluating organizational performance and improving accountability and governance.

CHAPTER 6

ISNAR'S PARTNERS AND ALLIES

ISNAR works both with and for national agricultural research systems, which are thus its partners as well as its clients. Within national systems, ISNAR identifies and prioritizes the types of entity targeted by its services. Beyond national systems, ISNAR forges alliances with other organizations to conduct research and to deliver products or services to national systems. In so doing, it seeks to multiply the effects of its work, as well as to complement its own expertise with that of others.

ISNAR's partners

Focus on the research system

ISNAR's mandate is limited to research systems and entities. Agricultural development involves many other groups, including policy-making bodies, technology-transfer agencies, farmers' organizations, marketing boards, input suppliers, and support services. ISNAR does not give these groups direct support for institutional development; however, it recognizes the importance of strong links between these groups and the research system. It therefore seeks to strengthen these links.

Scope within the research system

Crops and livestock are the principal focus of national agricultural research systems. Entities devoted to these major commodities have been, and will remain, ISNAR's major partners. However, entities concerned with (agro)forestry and fisheries are likely to become more prominent in the 1990s, as also are those devoted to the environment and to post-harvest activities. ISNAR will therefore increase its support to public-sector research entities working in these areas.

ISNAR's services to forestry and fisheries research will be limited to organizations contributing directly to resource conservation and sustainable production, and emphasizing the increased well-being of the poor. Those serving large-scale commercial exploitation will not receive priority.

Target groups within the research system

Because the types of organization requesting ISNAR's services have broadened, the institute has developed guidelines to define the target groups for its direct services in comprehensive institutional development and in strengthening research policy and management components. ISNAR targets those entities that:

- Are accountable to national governments and contribute to their development goals
- Receive substantial public funding

- Represent a significant element within the national system (i.e., address a major research problem or serve an important client group in the country)
- Seek to improve the well-being of low-income people

In accordance with these guidelines, government research organizations are ISNAR's priority target group as they have been in the past (see Box 5). If requested by a government, ISNAR also provides direct support to the research units of parastatals and of universities, as well as to research foundations. When developing relationships with these entities, the institute keeps core research organizations well informed of its activities. In its work with universities, ISNAR collaborates in strengthening the management of research and its contribution to development; it does not deal with curriculum development or agricultural education per se.

Other entities conducting research, such as NGOs, development projects, or private firms, are covered by ISNAR's system-wide reviews and planning exercises. The institute seeks to promote better links between these entities and public-sector organizations. For example, it encourages the exchange of useful research results, as well as joint public-private research ventures. ISNAR also considers these groups important clients for its information products, particularly management technologies. However, the institute does not normally provide these entities with direct support in comprehensive institutional development or in strengthening specific policy and management components.

Transnational approaches to research

Solving research problems often requires a pooling of efforts. For this reason, national systems and their partners in the global research community have developed various transnational mechanisms for conducting research. These include two mechanisms that have flourished over the past decade, namely networks and regional organizations.

Networks. A wide range of organizations create and use networks, which can be a useful means for sharing research responsibilities and results, and for achieving economies of scale. ISNAR provides direct support for strengthening the organization and management of networks only when these are formed by national systems and directly accountable to them. It also analyzes the potential benefits and costs of networks, and advises national research systems and organizations on how best to use them.

Regional research organizations. If requested to do so by national systems, ISNAR may provide direct support to regional research organizations when these are designated explicitly to assist and/or complement national research activities, or to carry out research on behalf of national systems. It seeks to strengthen activities that have been officially delegated to regional organizations by member national systems, such as training, or the setting of regional research priorities. More intensive activities to strengthen regional organizations may be undertaken with additional funding. Such activities could include the outposting of staff to ecoregional or other types of regional organizations.

ISNAR's allies

ISNAR seeks to play a catalytic role within the global R&D system that supports national agricultural research. It mobilizes donors and other organizations to support national systems, encouraging them to borrow and adapt the technology it has developed, and providing them with information on national

Box 5. ISNAR's target groups within national systems

Government research organizations. ISNAR reaffirms its commitment to working with developing countries to strengthen their government agricultural research organizations. These organizations are directly accountable to national policymakers and are expected to meet long-term goals serving the public interest. Their research is directed towards poverty alleviation and resource conservation -- goals identical to those of the CGIAR system to which ISNAR belongs and unlikely to be met through private-sector research. They play a vital role in providing information in support of policy-making for the agricultural sector. And they operate at every level of the research process, spanning policy-making, planning, execution, evaluation, regulation, and linkage functions.

Parastatals. ISNAR works with the research units of specialized parastatal institutes or boards when these have a mandate for strategically important commodities or other resources and are clearly accountable to national governments. These entities are likely to become more important in the 1990s as governments place greater emphasis on export and industrial crops to generate income. Structural adjustment policies favor these types of quasi-public institutions, which are often partially funded from taxes or cesses and have demonstrated strong client accountability in the past.

Universities. ISNAR assists publicly funded agricultural universities or faculties whose work is directed towards national development objectives and linked to agricultural-sector policies. ISNAR also seeks to foster strong links between university-based research and that of government organizations. In many developing countries, universities are, or have the potential to be, a vital component of the national agricultural research effort. Their research contribution is likely to increase in the 1990s with the growth of biotechnology and of research on resource management.

Research foundations. ISNAR collaborates with research foundations when they constitute an important element of the national research system, when they are clearly responsive to national agricultural research policies, and when their request for ISNAR's services is endorsed by government. The recent growth in research foundations is likely to continue in the 1990s, particularly in Latin America. These private-sector organizations conduct research for public goals and can serve as valuable complements to public-sector research organizations.

systems and the issues they face. It also taps the expertise of the global R&D community in delivering its services and in developing and implementing its program.

ISNAR's principal allies are donors and development agencies, regional organizations, international agricultural research institutes, and specialized institutions.

Donors and development agencies

At the request of national systems, ISNAR collaborates with donors in diagnostic reviews. It also participates in donor missions to design and evaluate projects when invited to do so by a national system with which it is already collaborating. In so doing it can ensure coherence between donor projects and ISNAR's own contribution to the system's development. ISNAR does not normally accept donor contracts to execute technical assistance projects, but it may occasionally do so in response to a specific request from a national system, and when the experience will add to its corporate knowledge.

Regional organizations

Some regional organizations are potential multipliers of ISNAR's work -- able to play an important part in extending ISNAR's research and training products, and in influencing the global policy dialogue. Through its information dissemination service ISNAR actively supports such organizations in their efforts to strengthen national systems whenever such support is consistent with its own program priorities.

International institutes

ISNAR seeks to collaborate with other international institutes, especially those of the CGIAR system, in introducing improved research program design and management practices, and in providing inputs to their training programs. In addition, ISNAR encourages inputs from other CGIAR centers when conducting reviews and planning exercises with national systems. ISNAR's collaboration with international institutes will be strengthened in the 1990s.

Specialized institutions

ISNAR also develops collaborative links with a range of institutions and individuals with specialized competence in areas where, because of its small size, it cannot be expected to develop in-house expertise. During the 1990s ISNAR will pay more attention to drawing on the experiences of larger, more advanced institutions in developing countries and of public and private research institutions in industrialized countries. As part of these efforts, academic and management institutes will be identified to host degree and nondegree courses with support from ISNAR.

CHAPTER 7

OPERATIONAL CONSIDERATIONS

ISNAR's medium-term plan for 1993-98 provides concrete proposals for implementing the institute's strategy over the next five-year period. This chapter links ISNAR's strategy to the medium-term planning exercise by reviewing the operational considerations that form the basis for more detailed planning. It provides guidelines for setting priorities and for monitoring impact, as well as for developing ISNAR's own resources.

ISNAR's services are largely demand driven. As the needs of its clients and partners change, so also will its program. This means that the institute's strategy will be periodically reviewed to ensure its continuing compliance with national needs.

Setting ISNAR's priorities

ISNAR has devised various criteria to assist its priority setting. Essentially, they fall into three main categories -- efficiency, effectiveness, and equity -- designed to ensure that ISNAR's activities will:

- Make efficient use of its resources
- Achieve maximum impact
- Benefit resource-poor research systems and producers/consumers

Core resource allocations

Between regions. ISNAR has established the following indicative guidelines for allocating the share of its core resources that is devoted to specific regions:

- Sub-Saharan Africa: 40%
- Asia: 30%
- Latin America: 20%
- West Asia-North Africa: 10%

This represents the same share of core resources to Latin America and to West Asia-North Africa as in the past, and a reallocation of some resources from Africa to Asia, reflecting the development of national systems and the changing state of agriculture in these two regions. This reallocation is in line with recent recommendations of the Technical Advisory Committee of the CGIAR regarding resource allocations for the system as a whole.

National systems in Africa have received considerable ISNAR support for comprehensive institutional development in the past decade: 22 out of the 44 systems receiving such support were in this region. Africa's agricultural research systems still need further strengthening but, in response to the changing pattern of demand in this region as elsewhere, the emphasis of ISNAR's services will gradually shift from comprehensive institutional development to the strengthening of individual components through networking or other relevant approaches. This should allow ISNAR to serve the same number of African countries as in the past, but at lower cost given the potential for spillover. In addition, Africa is expected to receive a larger share of noncore special project resources than will other regions.

In Asia, sustaining the achievements of the Green Revolution is rapidly becoming a critical challenge. Yields appear to have reached a ceiling in many countries, while the population continues to rise and natural resources are dangerously overexploited. The national systems of this region have expressed strong demand for ISNAR's support as they face this challenge. In accordance with the priorities identified by national research leaders, most of the work in Asia will focus on strengthening specific management components. Such an approach has considerable potential for spillover to national systems in other regions, as well as allowing ISNAR to continue to learn from the experience of this region's more advanced national systems.

Between services. Reflecting the changing nature of demand from national systems and the regional differences in the kind of support needed, ISNAR will gradually shift its emphasis from comprehensive institutional development towards its two other services during the first half of the decade. Indicative targets for allocating ISNAR's core resources after administrative and program management and support costs have been deducted are:

- 30% to comprehensive institutional development
- 45% to strengthening policy and management components
- 25% to the generation and dissemination of knowledge and information

Comprehensive institutional development

In view of the complexity of comprehensive institutional development, ISNAR screens countries' requests for this service against a check-list of considerations rather than adopting formal priority setting criteria. The major considerations used are shown in Box 6.

Efficiency. ISNAR has defined its target group for support in comprehensive institutional development as medium-sized research systems (approximately 100-1000 researchers) in the early stages of development or undertaking major reforms. This represents 30% to 40% of all national systems.

There are several reasons for selecting this target group besides the considerable experience ISNAR has already acquired in meeting its needs. The overhead costs of helping small national systems are about the same as for large ones, but the impact is less extensive. Providing comprehensive institutional development to small systems is therefore less cost-effective. Most large systems, in contrast, no longer require this type of service. Even if they did, ISNAR lacks the critical mass to serve large systems comprehensively. Such systems are frequently supported by organizations other than ISNAR, often through large technical assistance projects. Under these conditions ISNAR's contribution would be too small to be effective and could run into conflicts of authority and competence. Both small and large systems will continue to receive core support from ISNAR under its second type of service -- strengthening specific policy and management components.

ISNAR seeks to achieve maximum spillover effects from its partnerships in comprehensive institutional development. The countries selected should, as far as possible, be representative of a group facing similar problems. They should be willing to allow other countries to participate in certain activities, especially training, and to share, through publications or other mechanisms, the experience gained. The local expertise developed should be made available to neighboring national systems as far as possible.

Box 6. Considerations for selecting partners for comprehensive institutional development

Efficiency

- Medium-sized systems in early stages of development or undertaking major reforms
- Spillover potential: countries should be representative of a group facing similar problems

Effectiveness

- Potential impact of research on agricultural and economic development
- National stability
- Evidence of commitment to institutional development
- Basic research infrastructure is in place, and country can acquire resources to implement change

Equity

- Country has large numbers of low-income producers and consumers
- Country has no other partners in comprehensive institutional development

Effectiveness. Before agreeing to become a partner in comprehensive institutional development, ISNAR considers whether its activities will have an impact on agricultural research and development and, ultimately, on the development of the country as a whole. ISNAR does not normally enter into long-term partnerships with countries in which the agricultural sector accounts for only a small proportion of GDP. Where agriculture is an important contributor, the generation and adaptation of new technologies should constitute a major pathway to agricultural development, equal in importance to improved policies or better infrastructure.

Countries considered for this type of service should have a stable sociopolitical environment, an adequate basic infrastructure for research, and the potential to acquire the resources needed to implement change.

Before entering a long-term partnership, ISNAR needs solid evidence of a country's commitment to the development of its agricultural research system. Political will to implement the necessary changes and to commit the resources required should be clearly expressed at a high level within the government in the form of a written request for ISNAR's support.

Equity. ISNAR offers support in comprehensive institutional development to countries in which improving the performance of the agricultural research system can be expected to benefit large numbers of low-income producers and consumers. It also gives preference to countries which view it as the primary partner.

Long-term partnerships are entered into after a "trial period" in which ISNAR and the national system explore the potential benefits of collaboration. During this period, ISNAR diagnoses the system's research management problems, assesses the political and financial commitment to change, and considers whether or not its support is likely to make a significant contribution to performance.

ISNAR commits staff time and other resources to comprehensive institutional development on the basis of a joint program of work agreed to by the two partners. ISNAR and its partner review their collaboration every two to three years. In the course of the review the impact and achievements of collaboration are assessed, together with the need for ISNAR's continuing involvement. Once a country has established an effective research system, ISNAR reduces the intensity of its collaboration,

but usually continues to work with the system or one of its core institutions in strengthening specific components. Long-term partnerships do not normally exceed 10 years in duration.

Strengthening research policy and management components

For its service to strengthen specific components of national systems, ISNAR must select both the components on which to concentrate and the partners with which to collaborate.

Components. The policy and management components on which ISNAR concentrates reflect national needs. Several formal mechanisms are used to assess these, including joint diagnostic reviews of national systems and periodic consultations with national research leaders and donors. ISNAR's knowledge of national problems, acquired through its long-term partnerships, and the requests of individual national systems are further indicators of demand.

Some components rank high on the list of national research priorities but may not receive a comparable share of ISNAR's resources. This may occur because other institutions are active in this area. In these cases ISNAR's role is to develop sufficient expertise in the NARS to borrow and adapt the technologies developed by others, and to play the role of broker between its national partners and these other organizations.

The considerations used to select components are presented in Box 7. There are two major efficiency considerations. The first is that, given its limited resources, ISNAR focuses on problems that are common across national systems and in which it has a comparative advantage. The second is the cost of product development. For some components this requires long-term investment and many person-years, with high opportunity costs. If knowledge and tools are already available and merely require adaptation, costs will be lower and the chances of success higher. Costs will also be lower if there is a potential for collaboration with others in product development. Such collaboration has the added advantage of enabling ISNAR to develop a network of allies with a common approach to a specific problem.

The major consideration as regards effectiveness is the importance of the problem as a leverage point, that is, whether work on the component is critical to improved system performance. This may be considered as a proxy for the problem's urgency. A second consideration is the frequency of the problem. This can be assessed by the number of requests received by ISNAR for support in the area, or through needs assessments carried out by ISNAR or other agencies. A third consideration is the chances of success in product development.

Just as the adoption rates of agricultural technologies vary, so also do those of management technologies. Even if there is high demand for support in a given area, it does not follow that the products ISNAR develops will be widely used. The chances of adoption increase markedly when national managers or researchers are active participants in the process of product development. The potential for collaboration is therefore a major determinant of effectiveness as well as efficiency.

As regards equity considerations, ISNAR works on components which are a priority for countries with less-developed national systems and agricultural sectors, and on the types of product that such countries are most likely to use.

Partners. All national systems in developing countries are eligible for this service. All the criteria for selecting partners for comprehensive institutional development also apply to selecting those for component strengthening, except that related to the size of the system (see Box 6). ISNAR selects

Box 7. Considerations for selecting management components

Efficiency

- Common problem in which ISNAR has a comparative advantage
- Product development costs are likely to be low

Effectiveness

- The problem is a leverage point for improving system performance
- Frequency of problem
- High chances of success in product development
- National systems are likely to use the products developed

Equity

- The component is a priority for countries with less developed national systems and agricultural sectors

the countries in which to strengthen a given component in accordance with the importance of that component for improving system performance.

ISNAR often seeks to work on a component in several national systems at the same time using a networking approach. Both small and large systems are included in these networks, but ISNAR pays special attention to the needs of small systems through this service (see Chapter 4).

Generation and dissemination of knowledge and information

Under this service, ISNAR addresses strategic issues confronting national research systems; customizes, packages and disseminates new information products; and generates knowledge and information on the state of national systems. The extent of work and the selection of topics covered in each of these areas will depend largely on the availability of additional funding. Considerations for setting priorities in the first two areas are shown in Box 8.

The strategic issues on which to conduct special studies are chosen in consultation with ISNAR's stakeholders. There is usually a consensus on the issues likely to be important to the future development of national systems. ISNAR does not conduct special studies in areas in which it lacks a comparative advantage, but it may commission them from others.

The information products to be packaged for widespread dissemination are selected on the basis of feedback from national systems as to usefulness, ease of adoption without external support, and potential for broad applicability.

Box 8. Considerations for selecting strategic issues for special studies and materials for packaging and disseminating

Strategic issues

- Future importance for national systems
- ISNAR's comparative advantage

Materials for packaging and disseminating

- Degree of usefulness
- Ease of adoption without external support
- Potential for broad applicability

Monitoring ISNAR's impact

Evaluating ISNAR's performance and assessing its impact is difficult. While the mandates of the other centers in the CGIAR system focus at least in part on the development of improved production technology, that of ISNAR focuses wholly on institutional development. This is a complex and little understood process that cannot be satisfactorily assessed through the use of quantitative indicators alone.

Acceptable methods for assessing institutional development in national agricultural research systems have yet to be developed. Many external forces influence national systems and their performance, and this makes it difficult to isolate ISNAR's contribution.

Assessing the institutional performance of national systems has been designated as a major theme underlying ISNAR's work during the 1990s (see Chapter 3). In developing management technologies for this task, ISNAR will first test these on itself.

The criteria used to evaluate ISNAR's performance will include the number of requests it receives and meets for information, training, and advice; improvements in individual managerial capacities in national systems; adoption of ISNAR's products; changes in the structure, internal processes, and external relationships of national systems; and differences in the research results achieved by national systems (as indicated by the adoption of new production technologies, the number of publications, etc.).

A number of mechanisms will be used:

- The annual Internal Program Review
- The Biennial Meeting of Leaders of National Research
- The bi-annual meetings of the Program Committee of the Board of Trustees
- Periodic program and project reviews
- Feedback from stakeholders
- The External Reviews organized by the Technical Advisory Committee of the CGIAR

Developing ISNAR's resources

Funding

ISNAR's core budget is one of the lowest in the CGIAR system. The institute's 1991 External Review team recommended an immediate increase of US$ 2 million, or approximately 30%. On this basis it is hoped that the future annual total core resources at ISNAR's disposal will be US$ 9 million to US$ 11 million, at 1991 prices.

With these resources ISNAR would be able to collaborate with up to 10 national systems at a time in comprehensive institutional development and with some 20 to 30 countries in strengthening specific policy and management components. It would also be able to increase the resources devoted to forward-looking research on emerging issues of strategic importance to national systems.

Special project funding will be sought to complement ISNAR's core resources. It will be used to intensify work in priority areas, and to increase the number of national systems receiving ISNAR's services. Such funding will be all the more important if the increase in core budget does not materialize.

The traditional CGIAR donors may be expected to continue to be a source of special project funding. In addition, ISNAR will seek new donors and develop new funding mechanisms. An endowment fund may be launched in the hope of attracting grants and interest-free loans as well as conventional donor contributions.

Staffing

ISNAR's broad mandate and range of activities will continue to require a wide variety of staff with different professional backgrounds. As in the past, the institute will rely on a mix of disciplines drawn from the agricultural as well as the social sciences, including management science. It will also maintain a mix of people with experience as practicing scientists and as research managers, with a sound knowledge of the conditions under which agricultural research operates in developing countries.

Among several methods used to expand its "invisible college," ISNAR will cultivate long-term relationships with consultants, enabling them to become familiar with the institute's culture, program, and services. For some areas of work, long-term consultants can offer considerable economies over the recruitment of full-time staff positions.

In the coming years ISNAR will need access to an ever-widening range of management experience, including that of the private sector. Appropriate contractual arrangements, including joint appointments, will be sought with relevant management institutions and universities. ISNAR also hopes to attract short-term visiting professionals, either on sabbatical leave or on secondment.

ISNAR will redouble its efforts to increase the number of women on its staff. It will seek to employ women at all levels, including senior management, and will ensure equity in their conditions of employment and opportunities for career advancement. The institute will also seek to recruit more professionals from developing countries.

ISNAR through the 1990s and beyond

In the short to medium term, a combination of funding cutbacks and the growing demands placed on national research systems in developing countries will continue to undermine their performance. If it is to survive into the next century, public-sector agricultural research in these countries must demonstrate impact to its paymasters. To do so, it must successfully rise to new research challenges while continually adjusting to straitened economic circumstances and a highly volatile policy environment. The challenges to ISNAR and its partners outlined in this strategy document show that a strong international service devoted to strengthening national research systems is needed now more than ever.

In the longer term, the improved record of national systems may reduce the need for an institute such as ISNAR. When its task is done, ISNAR will be proud of its contribution to the strengthening of national systems and will willingly accept closure or a complete reorientation of its mandate.