

**DECENTRALIZING AGRICULTURAL
RESEARCH MANAGEMENT:
THE CASE OF THE REGIONAL
CONSORTIA IN THE PHILIPPINES**

by

Dely P. Gapasin

ISNAR

International Service for National Agricultural Research

The International Service for National Agricultural Research (ISNAR) began operating at its headquarters in The Hague, Netherlands, on September 1, 1980. It was established by the Consultative Group on International Agricultural Research (CGIAR), on the basis of recommendations from an international task force, for the purpose of assisting governments of developing countries to strengthen their agricultural research. It is a non-profit autonomous agency, international in character, and non-political in management, staffing, and operations.

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SUMMARY

The 1950s to 1970s was a dynamic period for agricultural research worldwide. Many developing countries reorganized and strengthened their national agricultural research systems (NARS) to meet the growing need to increase support for agricultural development. Increased availability of research resources required many NARS to develop new or modified organizational structures and management schemes to improve the use of these resources.

The 1990s present new challenges to the NARS in the light of changing needs and conditions such as decreasing resources and increasing the number of researchers. The growing trend is to decentralize the structure and management of the NARS to cope with these changes. In this paper, "decentralization" refers to shifting of control of the decision-making process from a central management to lower levels of executive authority. This process disperses power from one (centralized) to many individuals (decentralized) within an organization.

In the Philippines, agricultural research is coordinated by an apex body, the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD). In response to changes in agricultural research, PCARRD has established regional research and development consortia. A regional consortium is a research management strategy in which a network of regional research agencies shares resources and jointly manages its research and development activities. Currently, there are 14 regional consortia all over the Philippines which correspond to the geographic and political regions.

This paper describes the organization and structure of these regional research and development consortia. It discusses the experience of a NARS in using a decentralized scheme for managing agricultural research. It also highlights some issues that other NARS may want to consider in their attempt to decentralize their own system. Presentation of this experience may provide a useful way for research managers to look at their own organization. Although the model evolved within a specific context, that of the Philippines, some of the issues raised may be relevant for other NARS to consider.

The first section discusses how the research structures in the Philippines, the national research and development system, and the regional consortia, are linked. The second section describes the history of the regional consortia, their structure, and management. Examples are provided for those who might want to delve into the topic in more depth. The paper ends with a section on issues and lessons learned and possible applicability of the model to other NARS.

The topic on decentralizing agricultural research management was identified as high priority by NARS leaders during the November 1989 International Agricultural Research Management Workshop held at the The Hague, The Netherlands. This paper is a response from the International Service for National Agricultural Research Systems (ISNAR) to this need expressed by NARS leaders.

I. INTRODUCTION

The 1950s to 1970s was a dynamic period for agricultural research worldwide. Many developing countries reorganized and strengthened their national agricultural research systems (NARS) in response to the growing need to increase support for agricultural development.

This support for strengthening the NARS was expressed both in the increased number of agricultural researchers and research expenditures in developing countries. Pardey and Roseboom (1988) cite that the number of public sector researchers in developing countries, as part of the global total, increased from 21% in 1960-64 to 45% in 1980-85. In terms of share of the "real" expenditures for research, the amount increased from 25% to 35% during the same period. These increased resources for agricultural research often required new organizational models for their effective utilization.

In Asia, a research council system was established for managing the NARS to make them more effective and efficient. These councils are semiautonomous policy-making bodies for managing and coordinating research activities (Jain, 1989). The research councils formed the apex body of the system to provide a centralized coordination mechanism. This further reinforced the centralized structure of the NARS.

Many NARS have centralized structures for implementing agricultural research. The management functions, such as planning, monitoring, etc., are also centrally coordinated. These NARS are centralized because of the nature of their involvement as part of government bureaucracy. In some NARS, the components are highly complex, consisting mainly of public research agencies.

The 1990s present new challenges to the NARS. Public funding for agricultural research is decreasing. Foreign aid, which has provided many NARS with funds to implement research projects, are focusing on new areas and targets. Policymakers and client groups demand that the NARS show the impact of new technologies and the relevance of research programs to actual needs and specific problems. To meet these challenges, new organizational models are emerging.

There is a growing trend to decentralize the structure and management of agricultural research in many developing countries. In response, some NARS have established regional or outreach stations to decentralize research. A decentralized structure fits the nature of many NARS.

A NARS needs to simplify or streamline its decision-making process to allow effective and efficient management of agricultural research. The move to decentralize must account for the fact that key decisions are made in at least three levels of the system: national, institute, and research station (Dagg and Haworth, 1988). Therefore, no single group controls the decision-making process at all levels.

In this paper, decentralization refers to the control over the decision-making process, as cited by Hobbs (1990). A structure is centralized when decisions rest at a single point in the organization. If power is dispersed among many individuals, the structure is decentralized (Mintzberg, 1979). An organization is centralized when the decisions are made at relatively high levels in the organization. It is decentralized when the discretion and authority to make important decisions are delegated by top management to lower levels of executive authority (Jennergren, 1981).

Peterson (1969) cites five steps in the decision-making process: collecting information, processing information, making decision, authorizing resources, and executing decision. The process is centralized when one individual controls all steps. It is decentralized when others gain greater influence on the decisions.

In agricultural research, scientists exert influence on the various steps of the process because of their expert knowledge. Figure 1 shows the decision-making process for planning and review of agricultural research which was developed by Dagg and Haworth (1988), showing the three levels.

Decentralization is viewed as an end of a continuum, the opposite end of which is centralization. To be effective, a NARS must find an appropriate position within this continuum. A position is needed because better execution of research requires decentralized decisions. On the other hand, better policy and resource allocation require some centralized governance.

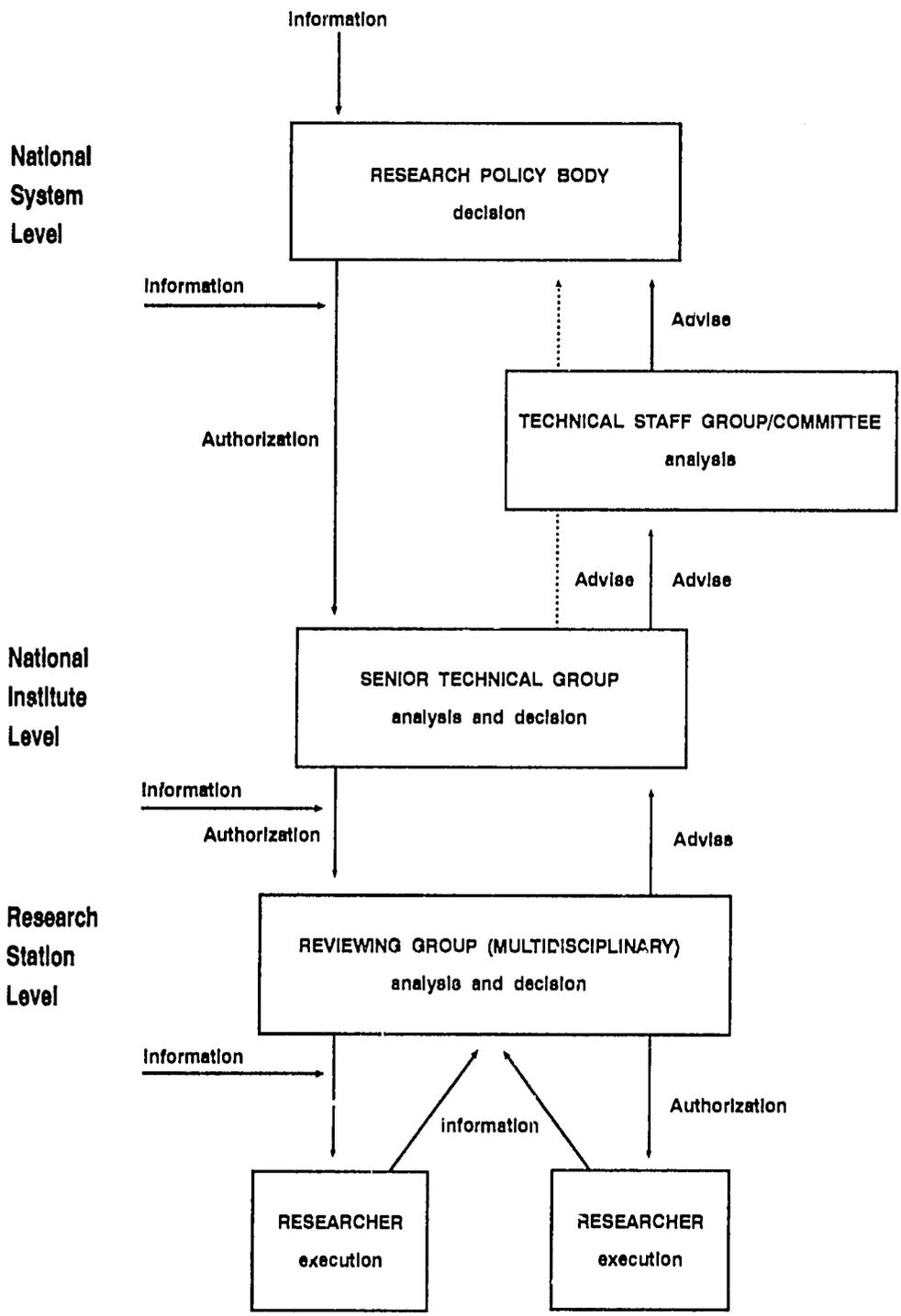


Figure 1. Decision-making process for the planning and review of agricultural research (based on Dagg and Haworth, 1988).

The system reviews conducted by the International Service for National Agricultural Research (ISNAR), have shown that many NARS in developing countries are both centralized and decentralized (Hobbs, 1990). The author cites that some NARS are "overly centralized" in staffing, administrative procedures, etc. Other NARS are "overly decentralized" in planning and coordination of research. This observation points to the importance of achieving a desirable position within the continuum.

In a centralized system, decision-making is concentrated at the top, making the system top heavy. This may lead to loss of initiative from scientists who work at the operational level. In a highly decentralized system, resources are dispersed, and critical mass of researchers may be lost. This results to fragmentation and/or duplication of efforts.

The critical management functions of a NARS are important points of decision-making. In decentralizing the research system, these decision-making points must be considered:

- analyzing and formulating policy;
- planning;
- setting priorities;
- allocating resources;
- formulating programs and determining budgets;
- monitoring and evaluating projects;
- managing information;
- managing human, physical, and financial resources;
- enhancing technology transfer.

The research manager must know which of these functions need to be decentralized to make the NARS more effective and efficient. He must decide the level at which decentralization should occur and whether new mechanisms and structures are needed to decentralize the system.

In Latin America, decentralization is expressed in the establishment of semi-autonomous or autonomous research institutes. These institutes were formed in response to the need for more flexible research structures. decision-making for agricultural research was moved from the ministry of agriculture to these research institutes. They are partially autonomous from the ministry in fiscal and other administrative functions. As such, the management of research is moved away from government bureaucracy. This new structure led to more flexibility in auditing, accounting, and financial management.

Some decentralized NARS in Latin America include: INTA of Argentina, EMBRAPA of Brazil, INIA of Chile, and INIAA of Peru (Valverde, 1989). The decentralization process in INTA is an interesting example. In a structural reorganization in 1984, decision-making in the system was dispersed to a lower level. Regional centers were established with their own governing bodies, to make management functions more effective and relevant (ISNAR, 1989).

The Philippine experience in decentralizing agricultural research is a similar response to a changing worldwide environment. Although the regional consortia evolved under different circumstances, this experience shows how each region has sought specific solutions to meet its specific socio-cultural-economic needs and problems.

The Philippine regional consortium is a research management strategy in which a network of regional research agencies shares resources and jointly manages its research and development activities. The establishment of the consortium resulted in the transfer of decision-making and coordination to a new and lower level. However, the central coordinating body at the national level continues to provide research policy and overall coordination.

This paper describes the organization and structure of these regional consortia. It discusses the experience of a NARS (the Philippines) in using a decentralized scheme in managing agricultural research. It also highlights some issues that other NARS may want to consider in their attempt to decentralize their own system. Presentation of this experience may provide a useful way for research managers to look at their own organization. Although the model evolved within a specific context, some of the issues raised might be relevant for other NARS to consider.

The first section discusses how the research structures in the Philippines--the regional consortia and the national research and development system--are interlinked. The second section describes the history of the consortia, their structure, and management. The paper ends with a section on issues and lessons learned and possible applicability of the model to other NARS.

II. THE PHILIPPINE NATIONAL RESEARCH AND DEVELOPMENT SYSTEM

A description of the Philippine agricultural research and development system is important in understanding the structure and functions of the regional consortia. The national research system and regional consortia are separate but closely linked systems. Their management functions are inter-related. However, as a management strategy to decentralize decision-making to a lower level, the regional consortia must be viewed in the broader context of the national system's structure and components.

The Philippine research and development system is quite complex. It reflects the very diverse ecology and archipelagic nature of the country. Its mandate covers not only agriculture, but also forestry, fisheries, natural resources, and environment.

Before 1972, agricultural research in the country was not coordinated. The research agencies were formally organized into a network when the Philippine Council for Agricultural Research (PCAR), now known as the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), was established in 1972. In 1986 there were 108 members of the network (Gapasin and Magboo). It consists of both implementing and coordinating agencies at three levels: national, regional, and research station (operational).

The national research and development system is very diverse. It consists of research agencies belonging to five government line departments, 28 state colleges and universities, private research centers and universities, four parastatals, and others. The composition is periodically reviewed to streamline the system. Changes have occurred resulting in variations in the composition of the system over the years. Table 1 shows the current distribution of the members of the national research and development system by types of agencies.

Table 1. Agencies Involved in the Philippine Agriculture and Resources Research and Development Network.

TYPE	AGENCY	NUMBER OF CENTERS
Government Departments	Agriculture	48
	Agrarian Reform	1
	Environment and Natural Resources	13
	Education, Culture, and Sports	29
	Science and Technology	2
	National Irrigation Administration	4
Parastatals Authorities	Philippine Coconut Authority	1
	Cotton Research and Development Institute	1
	Sugar Regulatory Administration	1
	National Tobacco Administration	1
Private Sector	Private research centers	3
	Private universities	2
Coordinating Councils	PCARRD	1
	PCAMRD	1

108

The establishment of PCARRD created a central policy making body at the national level. The council coordinates both research and development activities in very diverse agencies. Sometimes, problems occur because of the nature and composition of the system. Individual research agencies report to their administrative units and not to PCARRD, making coordination of research a very difficult task. The apex body is a science and technology agency. Further, there are other national coordinating bodies in addition to PCARRD. An example of this is the Bureau of Agricultural Research, established in 1987, by the Department of Agriculture.

The regionalization of the government in 1987 resulted in a more manageable system. The regional agencies can now better relate to each other. It is possible to implement a more focused program directed at regional problems and priorities.

1. Components of the National Research and Development System

The Philippine agricultural research and development system is divided into national centers, regional centers, cooperating stations, specialized agencies, and coordinating councils (Table 2). PCARRD had defined the responsibilities of these research centers and stations by the types of research they can conduct and their special commodity focus. Their specific roles in the system are periodically reviewed and updated.

Table 2. Composition of the Philippine Agriculture and Resources Research and Development Network.

TYPE OF CENTER	NUMBER OF CENTERS AND STATIONS
National centers	
- Multi-commodity	4
- Single-commodity	7
Regional centers	20
Cooperating stations	67
Specialized agencies	8
Coordinating council (PCARRD, PCAMRD)	2
Total	108

Source: Gapasin and Magboo, 1986.

Some criteria for determining the involvement of a research center in the network are, it: 1) has a sufficient manpower complement, 2) has adequate research facilities, 3) receives a research budget from government or other sources; and 4) currently conducts research and development projects. The commodity focus of the center is determined by the major commodities in the region and the current economic situation.

A national center conducts basic and applied research on one or more commodities across a broad range of disciplines. There are two types: multi-commodity and single-commodity national centers. The first type is usually based in an academic institution with a broad base of basic disciplines needed for fundamental and applied research. The second type has a specific commodity mandate and conducts basic, applied, and adaptive research on that commodity.

A regional center conducts applied research for commodities of major importance to the region in which it is located. It verifies research results from other centers that show potential application to a specific location. The regional centers are located in areas representing the basic agroclimates.

A cooperating station provides sites for adaptive or on-farm research. These trials fine-tune research results, considering micro-environmental differences. This station works closely with the extension system. A specialized agency has a specific sectoral or disciplinary mandate. Its activities cut across sectors and regions.

2. The Coordinating Councils for Agricultural Research

There are two coordinating councils for agricultural research in the Philippines: PCARRD and the Philippine Council for Aquatic and Marine Research and Development (PCAMRD). The fisheries council was established in 1987, using the Fisheries Research Department of PCARRD as its core. Based on their mandates, these councils:

- formulate strategies, policies, plans, programs, and projects for science and technology development;
- program and allocate government and external funds for research;
- monitor research and development projects;
- generate external funds for research and development.

The two councils are the central policy making bodies for agricultural research at the national level. They are administratively separate from the members of the national network. They are planning councils of the Department of Science and Technology (Figure 2).

Initially, PCARRD was under the Department of Agriculture and Natural Resources (DANR). When DANR separated into a Department of Agriculture and a Department of Natural Resources in 1974, PCARRD was moved to the National Science and Development Board (NSDB), to maintain its integrated nature. If PCARRD was to provide a united focus at the program level, it also needed scientific credibility, which the NSDB provided. The integration of research efforts in agriculture and natural resources remains today.

PCARRD is a semiautonomous agency (Figure 3). It has a Governing Council which sets policies for research and development in the country. A Technical Advisory Committee provides technical backstopping to the Governing Council. The inter-agency nature of these bodies ensures that both public and private sectors are well represented in policy determination for agricultural research.

Thirty-two national research and development teams provide technical backstopping to the PCARRD Secretariat. They are inter-agency and inter-disciplinary in composition. Private-sector non-government organizations (NGOs), private volunteer organizations (PVOs), client groups, and development agencies are well represented. These teams provide technical credibility to the council. They also give direct feedback from the scientists and technology users.

The Secretariat is managed by an Executive Director and two deputies: one for research and development and another for institution development. It has six technical and four research support divisions, each headed by a director.

PCARRD has three kinds of technical staff. Program specialists monitor, review, and evaluate research projects. Subject-matter specialists transform research results to users' language and prepare audiovisual materials. Another group works on institution development, including manpower training, facilities improvement, equipment procurement, and financial management.

PCARRD staff do not conduct technical research themselves. They mainly provide research management services to the network and consortia. This prevents them from competing with researchers for resources.

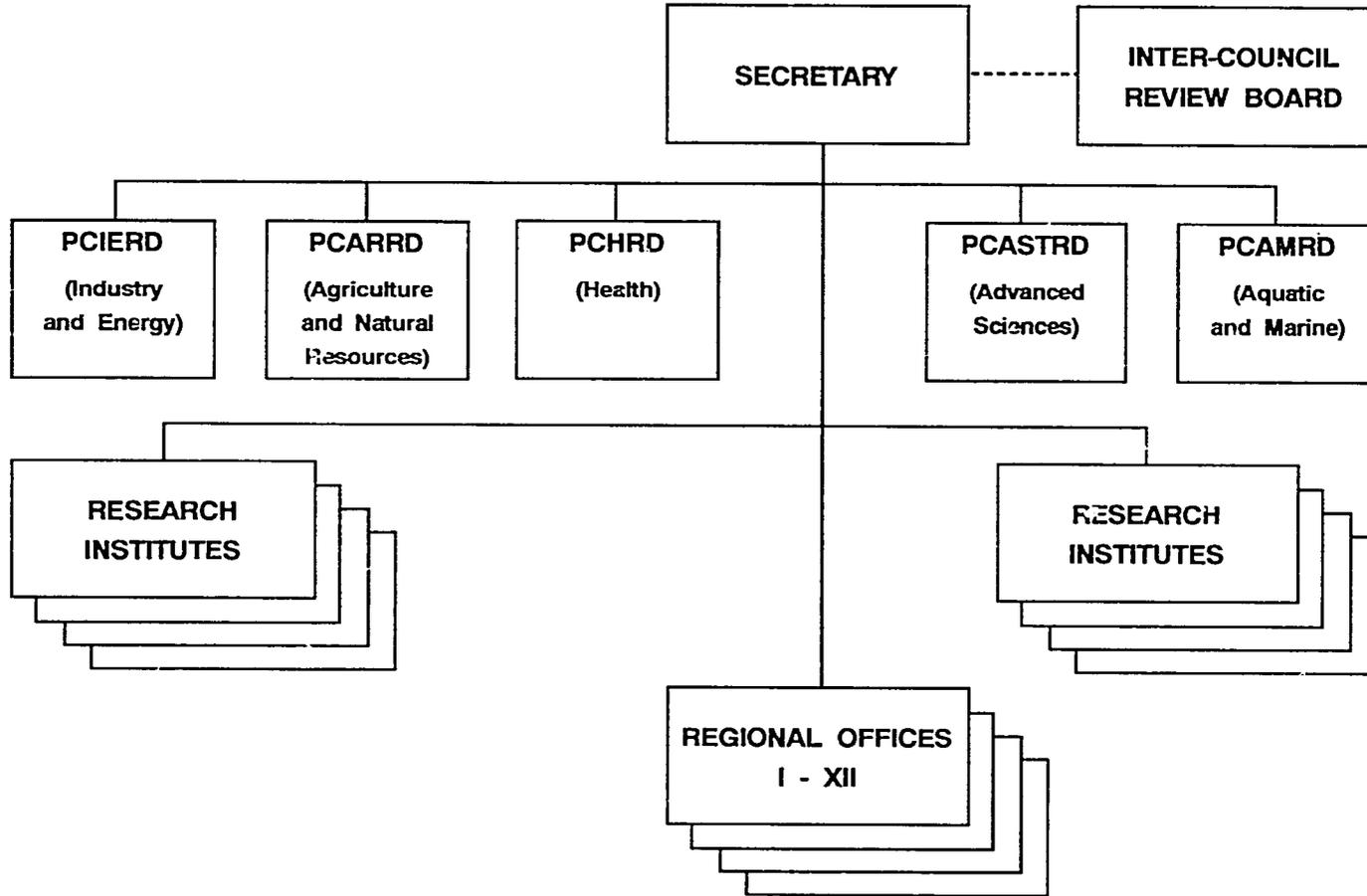


Figure 2. Organizational Set-up of the Department of Science and Technology showing the five coordinating councils.

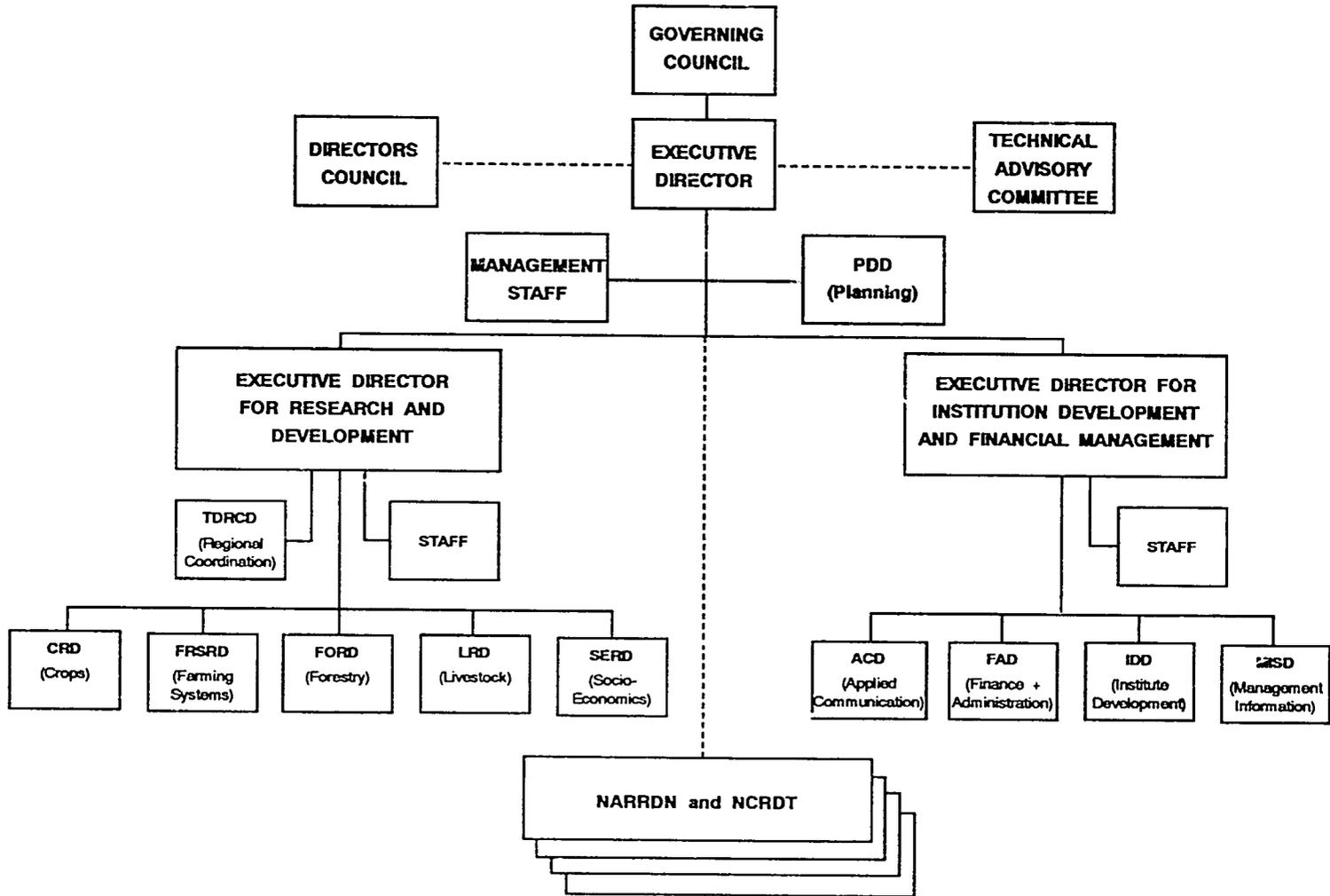


Figure 3. Organizational set-up of PCARRD showing its relationship to the national research and development network.

3. Milestones: From Research to Research and Development

In 1972, both PCARRD and the national agricultural research system were mandated to carry out research only. As the system matured, it was realized that a stronger linkage between research and development was needed to facilitate transfer of improved technologies and research information to clients. This would make the system more relevant.

In 1982, when the NSDB was reorganized into the National Science and Technology Authority (NSTA), development was added to PCARRD's mandate. PCARRD also became the model for organizing new planning councils (for health, energy and industry, and advanced sciences). There are now five such councils for science and technology.

By changing its mandate, PCARRD was able to allocate funds for action or pilot projects. Component technologies or technology packages are fine-tuned under semi-commercial conditions. New technologies are introduced to farmers with necessary support services. These include: credit, improved seed and other inputs, joint training of farmers and extensionists, information transfer, marketing, processing, and utilization.

The development mandate also provided a stronger link to the private sector, NGOs, PVOs, and development agencies. These groups became involved in planning and other research management activities. Their participation improved the feedback mechanism, so that research became more responsive to clients' needs. Many researchers also became involved in on-farm research and diagnosis.

If it was difficult to coordinate research before, the integration of development increased the difficulty of the task. Many more diverse agencies which became part of the system. Also, the themes and coverage of projects expanded. However, overall, the national research and development system became more relevant. It was able to integrate a development perspective into the research programs.

III. THE REGIONAL RESEARCH AND DEVELOPMENT CONSORTIA

By establishing the regional consortia in the Philippines, decision-making with its attendant mechanisms, was decentralized to a new level. The consortia are informal networks of regional agencies bound together by memorandum of agreement. The member agencies agree to collaborate in managing an integrated research and development program and share resources. The first consortium was established by PCARRD in 1975 and by 1988, 14 consortia were operational (Figure 4).

In the Philippines, the consortium is a mechanism or strategy for a network of agencies to collaboratively manage, coordinate, and implement their own research and development programs (Figure 5). The strategy recognizes that no single research agency can cope with all the demands for improved technology and new knowledge. Research is more efficient if resources (manpower, facilities, equipment, funds) and information are shared among these agencies. Their common bond is an integrated research and development program.

The consortium is a medium for joint setting of priorities, planning, monitoring and evaluating projects, enhancing technology transfer, and training. The agencies complement each other by maximizing their strengths and minimizing their limitations. The consortium provides a medium through which pooled resources are harnessed to support research and development at the research station (operational) level.

Some of the reasons for decentralizing research management to these consortia include:

- to make research management and decision-making more participative;
- to give more autonomy to regional agencies in managing their own programs;
- to focus the research and development program on regional needs and priorities;
- to lessen centralized control in allocating limited resources;
- to increase collaboration among agencies in a region;
- to harness political will to strengthen regional research;
- to strengthen linkages among diverse agencies to facilitate transfer of technology to users.

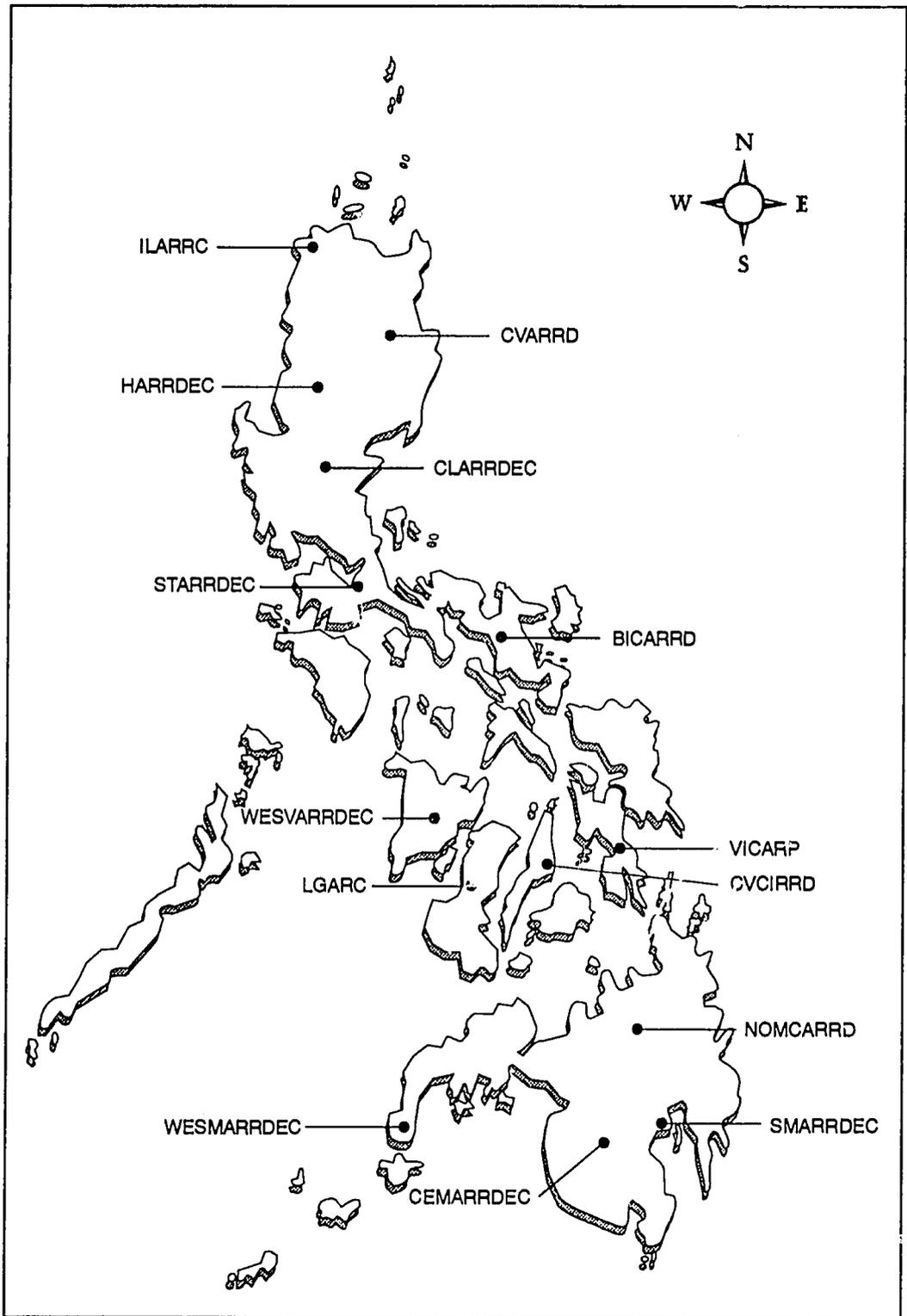


Figure 4. The 14 Regional Research and Development Consortia of The Philippines.

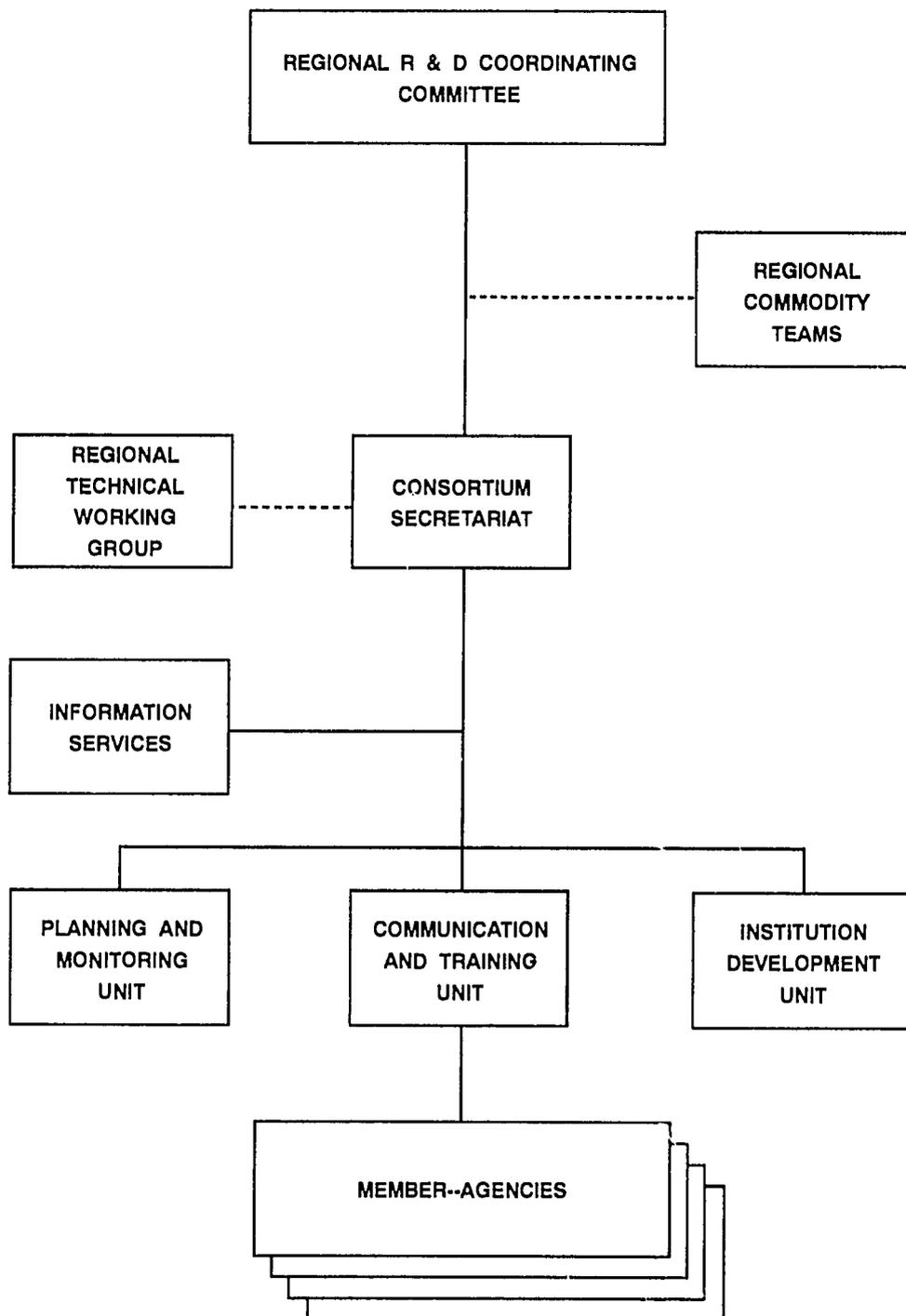


Figure 5. Organizational set-up of the Visayas Coordinated Agricultural Research Program (VICARP), one of the Regional Consortia.

1. Historical Perspective

The regional consortia were established, initially by PCARRD, as a mechanism for sharing of resources. It was started in 1975 as part of the first Agricultural Research Project (ARP I). It was implemented by PCARRD and funded by the United States Agency for International Development (USAID).

The objective of the project was institution building, to strengthen the national agricultural research system. Funds from USAID and the Philippine government were channeled through the consortia. They were charged with determining the research needs of the region and identifying recipient agencies. Phase II of the project (ARP II) provided additional resources and the number of recipients was increased. These new resources were also channeled through the consortia.

At first, the consortium concept was based on a complex of research stations in a contiguous area. These stations were to share common facilities developed by PCARRD. However, in most regions, the research centers were dispersed in the provinces. So a network of agencies was set up with a lead agency, a leading research center (later called base agency). The lead agency provided facilities and staff for the consortium secretariat. Eight consortia were established following this scheme.

Up to 1987, the eight consortia served the major agroclimatic zones of the country. Hence, the consortia addressed the needs for location-specific technologies. However, when the government was reorganized in 1987 to regionalize its structure, new consortia were formed, based on political regions. Two concepts underlie the organization and structure of the consortia.

- a. *Research Center Model: Original Concept.* The first consortium was based on the concept of research center or complex. Four research agencies, in the island of Negros, signed a memorandum of agreement to form the La Granja Agricultural Research Center (LGARC). It became a model for establishing three other center-oriented consortia in 1976.

LGARC consists of the main research station of a sugar parastatal (Sugar Regulatory Administration), two research stations of the Department of Agriculture (one crops and one livestock), an outreach research station of a university (University of the Philippines at Los Banos), and PCARRD. The La Granja Sugar Experiment Station is the lead agency.

The composition of LGARC has remained the same since it was formed. The stations share consortium facilities that were built by PCARRD. These include staff houses, offices, conference facilities, library, and farm machinery building. PCARRD continues to provide funds to operate the consortium.

The success of LGARC, in sharing and managing research resources, is partly due to the contiguous nature of the research stations and their service areas. There is little duplication of effort because the commodity focus of the member-agencies varies (livestock, sugarcane, other crops). They are all members of the national network so they can receive PCARRD grant-in-aid funds. The university station also has a training mandate.

The consortium scheme facilitates linkages among researchers and managers. They live and work together, although they are administratively reporting to different agencies. They share seminars, project reviews, planning workshops, training, research facilities, equipment, and others. They also jointly implement some research projects.

- b. *Consortium Model: New Concept.* The use of the consortium model in 1978 brought about new changes in the regional system. The integration of dispersed research centers and stations in a region was possible. Two types of agencies became members of a consortium. The first group includes agencies that actually implement research projects. The second group consists of government agencies that coordinate agricultural research or related activities.

The external panel that reviewed ARP I (IADS, 1980) found that the national network of centers and stations and the regional consortia were being confused. The regional research centers in the network, where some of the consortia were based, were considered the same.

However, their mandates and responsibilities were different. As recommended by the IADS, a performance evaluation of the consortia was done in 1983. It redefined the consortia structure and reiterated that the consortium arrangement is aimed at optimizing the use of limited resources and facilities through sharing (PCARRD, 1983).

In 1987-88, using the consortium model, six new consortia were formed, bringing the number to 14. Currently, there is one consortium per political region. Most of the original center-oriented consortia shifted to the consortium model of networking. Only LGARC remains as a center-oriented consortium.

The shift to the consortium model allowed many more research centers and stations to take advantage of the sharing arrangement. Some agencies, which are not members of the national network, became provisional members of the consortia to improve their research capability. They are able to participate in training, planning workshops, regional reviews, seminars, and other consortium activities. Because of their involvement, some agencies have become regular members of the national network.

2. The Consortia Mandates

The memorandum of agreement, signed by heads of agencies involved in the consortium, sets the mandates and structure of the consortium. Usually, a memorandum covers a ten-year period.

The first consortia were mandated to coordinate agricultural research. However, as the national research system expanded its focus to include development, the mandates of the consortia, likewise, shifted. The new memoranda, as well as those that were redrawn later for the older consortia, emphasized the development mandate. This provided them with a stronger program for technology transfer, information dissemination, and training, and stronger linkages to extensionists and clients.

The shift to development increased the participation of development agencies, the private sector, NGOs, and PVOs in the consortium. The membership in each consortium shifted accordingly. The activities became more diverse, and some of the mechanisms for managing the consortia were modified.

The regional consortia are recognized by the Philippine government departments and many donors. Some donors are now providing funds for the region through the consortia. This strengthens one of the consortium's functions, that of generating funds to support joint activities.

3. PCARRD's Role in the Consortia

PCARRD played a major role in establishing the regional consortia. Through them, PCARRD harnessed the capability of the research agencies at the regional level to manage research. In turn, it enabled regional agencies to improve their own management capabilities. Since 1975, PCARRD has nurtured the system and initiated changes to keep it dynamic.

PCARRD's roles in forming the consortia varied. In most consortia, the council provided leadership in their establishment. In a few, it supported the agencies that took the lead role in organizing the consortium. PCARRD is a member of every consortium.

PCARRD is the central decision-making body for the national agricultural research and development system. It provides national research policies and guidance. At the regional level, PCARRD gives the broader view of topics when specific issues are discussed and decided upon. It also provides the continuity needed across the consortia. It makes it possible to properly coordinate and synchronize activities of national concern.

PCARRD had been a major contributor to the operation of the consortia. In the PCARRD core budget, the government provides an expense item for managing the consortia. This amount is allocated based on the needs expressed by the consortia and transferred to them for management. The member-agencies and the base agency provide counterpart funds. In many consortia, the consortia expense item is a part of the agencies' regular budget.

In addition, PCARRD provides grant-in-aid funds to implement joint projects. It had encouraged the consortia to generate their own funds. Some consortia have formed private research or science foundations to receive funds from donors and other sources. Generating funds has become a regular consortia activity.

IV. ORGANIZATION AND STRUCTURE OF THE CONSORTIA

The 14 consortia vary in organization and structure. There are variations in the organization and structure of the 14 consortia. They have to fit the needs of the regions and the development levels of the agencies involved. They also consider the political climate in the region. However, the basic structure is similar. The organization and structure are specified in the memorandum of agreement which established the consortium.

1. Organization of a Consortium

All of the consortia have three basic bodies: a policy-making body, technical support groups, and a secretariat. This structure reflects that of PCARRD. Figure 4 indicates the organizational set-up of the Visayas Integrated Agricultural Research Program (VICARP) of Region VIII (Eastern Visayas).

a. *RDCC: The Policy Making Body.* The Regional Research and Development Coordinating Committee (RRDCC) is the policy making body of the consortium. In some consortia, it is called a Council or Board. It provides leadership and determines policies and guidelines in operating the consortium. The functions of the RRDCC include:

- lays down broad policies, guidelines, and plans for the consortium;
- approves and endorses the regional integrated program and budget;
- approves the consortium budget;
- formulates policies to improve conduct of research and dissemination of research results;
- designs strategies to improve research capability of member-agencies.

The RRDCC is composed of heads of the member-agencies of a consortium. It involves regional and bureau directors of government line agencies, presidents of state colleges and universities, directors of research centers, and representatives of national coordinating agencies, the private sector, and other groups.

In the past, the RRDCC was chaired by the Director General of PCARRD. In 1985, leadership was decentralized and transferred to the head of the base agency. Currently, in many consortia, the chairperson is elected by the member-agencies. In some, leadership is rotated among the member-agencies within a two-year to three-year period. This change in policy allows other research managers to lead the consortium.

b. *Technical Support.* Technical backstopping is provided by two groups: the Regional Technical Working Group (RTWG) and the Regional Commodity Teams (RCTs). The RTWG provides technical advice to the RRDCC. The RCTs give technical advice to researchers and research managers during planning, reviewing of proposals, and monitoring and evaluation of projects. This arrangement involves both the research managers and senior scientists in managing research. The consortium provides a venue for continuous interaction among these groups.

The RTWG consists of directors of research from state colleges and universities, assistant regional directors for research and regional technical directors for research of line government departments, and research coordinators of other agencies. The group is chaired by the consortium coordinator. The RTWG has the following duties:

- evaluates the regional research and development program and budget;
- provides technical advice to the RRDCC;
- reviews and recommends guidelines in utilizing research resources to the RRDCC;
- develops strategies for generating funds to support consortium activities;

- assists the consortium coordinator in operating special activities;
- initiates seminars and conferences.

The RCTs are inter-agency, multi-disciplinary regional technical teams. Like the national commodity teams of PCARRD, they provide technical support to the consortium. They are composed of senior researchers representing the major disciplines in the regional integrated program. They are organized by commodity, and the number of teams varies across regions, based on the major commodities. Their functions include:

- review and recommend the regional research and development framework;
- evaluate the technical aspect of research proposals;
- monitor and evaluate implementation of projects;
- provide technical expertise in training and technology transfer activities.

The RCTs serve to integrate activities at the program level. These teams complement the national commodity teams of PCARRD. In some cases, the same person serves both the national and regional commodity teams. These scientists act as integrators across disciplines and agencies at the program level.

- c. *Consortium Secretariat.* The consortium secretariat coordinates the research and development activities of the member-agencies. It is headed by a consortium coordinator, who is a research manager and also a scientist. In all consortia, the coordinator works on a part-time basis. S(he) is usually the research director of the base agency. The coordinator manages the day-to-day activities of the consortium. S(he) administers the consortium, based on policies formulated by the RRDC.

The duties of the consortium coordinator include:

- coordinates formulation and updating of the research and development program;
- coordinates monitoring and evaluation of projects;
- facilitates sharing of resources among member-agencies;
- organizes and manages training, workshops, and seminars;
- receives, disburses, and accounts for all consortium funds;
- manages the secretariat staff;
- acts as secretary of the RRDC.

The coordinator is assisted by full-time secretariat staff, who are usually regular personnel of the base agency. In a few consortia, other member-agencies provide part-time technical staff to strengthen the secretariat. These staff report to the coordinator but are administratively under their own agencies.

The number of staff in the secretariat varies, depending upon the activities of the consortium. They include both technical and administrative support staff. They provide management services to the member-agencies, maintain regional research files, and facilitate coordination of regional research activities.

As indicated in Figure 4 (VICARP), the consortia have various units headed by part-time senior researchers from the member-agencies. These personnel are selected for their expertise and are allowed by their agency heads to work for the consortium. They are accountable to the consortium coordinator but administratively report to their own agency heads. This part-time secondment to the consortium sometimes leads to problems when the staff person has many responsibilities.

In VICARP, for example, there are three units: 1) planning and monitoring, 2) communication and training, and 3) institution development. An information service group provides information support, including maintaining a consortium library. The type and number of units vary, based on the activities of a consortium. However, there are two common units: planning and monitoring, and applied communication and training.

Backstopping each unit is a team represented by part-time staff from the member-agencies. For example, the Communication and Training Unit of VICARP consists of the Regional Integrated Applied Communication Team (RIACT). The group formulates and implements an action plan to disseminate technology and information. They conduct diagnosis of communications needs of clients. They work with the extension group in preparing media materials and training modules directed to specific needs of clients.

2. Consortia Models

The structure of the consortia had evolved through the years. It was modified to suit changing conditions in the region and the national system. There are four models: 1) center-oriented consortium, 2) program-oriented consortium, 3) lead-agency consortium, and 4) non-lead-agency consortium (Gapasin and Loriga, 1989).

The most common type is the consortium with a lead agency. Currently, 11 consortia are following the lead-agency model. The lead-agency is now referred to as base agency, indicating that it provides the secretariat of the consortium.

The lead-agency model is based on a strong national or regional center being in the region. This agency provides overall leadership in the regional network. An example of this type is the Central Luzon Agriculture and Resources Research and Development Consortium (CLARRDEC). It was formerly a center-oriented consortium, known as the Central Luzon Agricultural Research Center (CLARC).

The center-oriented consortium has already been discussed in Chapter III. There were four such consortia, but to date, only LGARC still follows this model. It became difficult to maintain the physical sharing of resources when member-agencies were located in different provinces or islands.

VICARP of Region VIII represents a program-oriented consortium. It evolved from the geographic dispersion of the research centers in different islands. The arrangement prevents the sharing of physical facilities and other resources. The consortium is based on a coordinated research and development program for the region.

The joint implementation of a coordinated program started from this model. It was later adopted by all the other consortia. This scheme required joint planning, review of projects, and other activities. This institutionalized the annual regional review and planning workshop of PCARRD at the regional level. All the consortia currently coordinate annual reviews and planning.

The last model, the non-lead-agency consortium, is based on a strong non-sectoral secretariat based at a Regional Management Center managed by an NGO. The Central Visayas Consortium for Integrated Regional Research and Development (CVCIRRD) of Region VII is an example of this model. The secretariat facilities are provided by the regional office of the Department of Agriculture, which also manages the consortium funds. CVCIRRD has its own private research foundation that receives funds from some sources.

An interesting feature of the regional consortia is their dynamic nature. Changes have been made over the years. The schemes that were found to work were used in setting up new ones or improving existing ones. This dynamism keeps them relevant to the changing needs of agricultural development in the country and that of research.

3. Membership in the Consortia

The number of member-agencies varies across consortia (Table 3). This is determined by the number of agencies actively involved in agricultural research and development in a region. Initially, the policy instituted by PCARRD was to include only those agencies that are regular members of the national research and development network.

However, as the consortia matured, they considered other agencies that showed potential for conducting research. These new members (called associate members) participated in many of the consortia

Table 3. The 14 Regional Research and Development Consortia, Indicating Base Agencies and Number of Member Agencies.

REGION	CONSORTIUM	BASE AGENCY	No. OF MEMBER AGENCIES	DATE ESTABLISHED
CAR	HARRDEC	BSU (university)	13	1978
I	ILARRC	MMSU (university)	13	1979
II	CVARKD	ISU (university)	15	1978
III	CLARRDEC	CLSU (university)	16	1978
IV	STARRDEC	UPLB (university)	12	1988
V	BICARRD	CSSAC (state college)	11	1976
VI	LGARC	DA-SRA (parastatal)	5	1975
VI	WESVARRDEC	DA-REG. VI (agriculture)	21	1988
VII	CVCIRRD	DA-REG. VII (agriculture)	11	1987
VIII	VICARP	VISCA (state college)	8	1978
IX	WESMARRDEC	DA-REG. IX (agriculture)	13	1987
X	NOMCARRD	CMU (university)	14	1978
XI	SMARRDEC	DA-REG. XI (agriculture)	11	1987
XII	CEMARRDEC	USM (university)	11	1988
		Total	181	

Source: Gapsin and Lorica, 1989.

activities, like planning, review, training, seminars, and workshops. As these agencies improved their research capability, they obtained funds from the government to start some research projects. Their membership in the consortia helped them justify the new resources.

Two types of agencies are involved in a consortium: coordinating agencies and implementing agencies (Table 4). The coordinating agencies do not implement research. Their mandate is to plan or coordinate research. Some are national agencies, like PCARRD or the Bureau of Agricultural Research of the Department of Agriculture. They may be regional planning agencies, like the National Economic Development Authority (NEDA) regional offices.

Some problems arise because there are some coordinating agencies involved. As indicated in Table 4, SMARRDEC has three national coordinating agencies. Although the area of coverage of these agencies is different, sometimes their activities lead to confusion. This problem can be solved by improving coordination and continued dialogue.

The second group are implementing agencies consisting of research centers and stations of line government departments and state colleges and universities. It also includes parastatals or private-sector research centers.

The participation of the private sector, NGOs, PVOs, and other agencies is increasing. This is shown in the composition of SMARRDEC of Region XI (Southern Mindanao, Table 4). Of the 11 members, three are private research centers or parastatals. Their active participation is a welcomed development. In the past, the members of the consortium were mainly from the public sector.

Table 4. Members of the Southern Mindanao Agriculture and Resources Research and Development Consortium (SMARRDEC) of Region XI.

RESEARCH INVOLVEMENT	AGENCY	TYPE OF AGENCY
Coordinating	Bureau of Agricultural Research, Department of Agriculture	Government (national)
	Department of Science and Technology, Region XI	Government (regional)
	Environmental Research and Development Bureau, Department of Environment and Natural Resources	Government (national)
	National Economic and Development Authority, Region XI	Government (regional)
	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development	Government (national)
Implementing	Baptist Rural Life Center	NGO
	Department of Agriculture, Region XI (Base Agency)	Government (regional)
	Department of Environment and Natural Resources, Region XI	Government (regional)
	Philippine Coconut Authority, DAVAO Research Center	Parastatal
	Twin Rivers Research Center	Private
	University of Southeastern Philippines	Government

Source: Gapsin and Lorica, 1989.

Most consortia follow the guidelines used by PCARRD for evaluating membership in the national network in evaluating their members. In some consortia, membership in the national network is a basic criterion. However, currently, some consortia accept affiliate members. These are agencies with potential to contribute to agricultural research. They can improve their research capability by being involved in consortium activities.

Some of the criteria used for determining membership in the consortium include:

- agency has current research budget and program;
- it has minimum manpower to conduct research in the basic disciplines;
- it has available research facilities;
- it is capable of contributing to research in the major commodities of the region.

Since the consortia were organized after the national network was established, they tend to follow the current procedures and mechanisms set by PCARRD. However, additional criteria are used by individual consortia.

V. MANAGING THE REGIONAL CONSORTIA

The regional consortia highlight PCARRD's efforts to decentralize the management of agricultural research. The consortia are coordinating bodies. They carry out functions similar to PCARRD but at the regional level.

Their management is directly related to the functions and structures of the consortia. These may vary because of some regional differences. The following are some relevant issues that relate to consortium management.

1. Operating the Consortia

The consortium is operated by a secretariat. The main responsibility for day-to-day activities rests on the consortium coordinator. During peak periods of activities, the load becomes quite heavy because s(he) is only a part-time staff person. Usually, s(he) is a top manager of the base agency and conflict in activities between the agency and consortium may arise. This results in variability in the activity level among the consortia.

The support provided by the full-time secretariat staff is critical. They carry out most of the coordinative functions and periodically visit the member-agencies. Since they provide management services for the region, they have to build up their own technical credibility. They directly deal with policymakers, research managers, researchers, extensionists, and clients; hence they are seen as front-liners.

The coordinator is the direct link of the consortium to PCARRD. S(he) has access to the PCARRD secretariat and arranges for the council to act on the requests for additional management services within reasonable time. One major constraint in operating the consortium is that imposed by the limited time and resources available to the coordinator.

2. Coordinating within the Consortia

Coordination within the consortia means coordinating research activities of the member-agencies. These activities are directly related to managing research at the regional level, which was transferred to the consortia by PCARRD. These include regional planning, setting priorities, monitoring and evaluating projects, programming and budgeting, training, and others.

These activities are coordinated across agencies, so that planning and execution are better synchronized. All members of the consortium can relate their own activities to a common schedule for the region. The secretariat coordinates these activities.

All members are represented in the bodies or units within the consortium. These personnel are responsible for the proper integration of their agency's activities in these areas within the consortium. They also link their own agencies to the other members. Sometimes this arrangement becomes complicated, hence problems arise. Overall, the scheme links the agencies quite effectively. However, this takes the time and commitment of the leaders.

3. Coordinating across Consortia

Coordination across consortia is a responsibility of PCARRD. Since the council is a member of all the consortia, it is able to do this. Many of the research management mechanisms are still synchronized at the national level. Periodic activities, such as budget preparation, planning, annual review, and others activities, are systematized this way.

For example, the annual review of projects is an agency activity. It is coordinated by the Office of the Director of Research of the agency. Within a region, the consortium secretariat helps plan the review and draw up a schedule for the member-agencies. The consortium staff, in coordination with PCARRD, arranges for an external evaluation panel. The secretariat staff is present in all venues within the region. Jointly with the agency, the secretariat staff carry out follow-up activities.

The review of technologies and consultation with the clients is a regional activity and is held in one venue. The planning and conduct of the review is coordinated by the consortium secretariat. The schedules of all regional reviews is synchronized by PCARRD. Evaluation and follow-up activities are carried out jointly by PCARRD and the consortia.

Within PCARRD, the Technology Development and Regional Coordination Division (TDRCD) is in charge of consortia management. The Executive Director represents PCARRD in the consortium policy making body. However, this responsibility is usually delegated to the Deputy for Research and Development, who supervises the TDRCD. A PCARRD director and one mid-level management staff person are responsible for one consortium and provide continuity of the council's involvement in that consortium. They represent PCARRD in many consortia activities.

Overall, coordination is done through quarterly meetings of consortia coordinators. These meetings are organized by PCARRD and are chaired by PCARRD's Deputy for Research and Development. It is usually held in one of the base agencies and is rotated every quarter. This practice exposes the coordinators to the programs and activities of other consortia.

Activities in the previous quarter and plans for the next quarter are reported during the meeting. This allows the coordinators to share experiences with each other. The agenda also includes issues and policies concerning all of the consortia so that the meetings are occasions for disseminating and exchanging information.

The annual coordinators' meeting is held at the PCARRD headquarters. The coordinators present the achievements of the consortia in the past year and propose the annual plan for the next year. These are some of PCARRD's major considerations for determining the attainment of goals of the consortia.

4. Funding Consortium Activities

Consortium activities are funded through three major sources: PCARRD, member-agencies, and the base agency. On the average, currently, the contribution of each group accounts for 25%, 25%, and 50% of the total consortium budget each year, respectively.

The consortia are informal networks working within the government bureaucracy. The memorandum of agreement, which establishes their mandates, does not give them legal status. This has created problems in transacting financial matters because of government auditing requirements.

To solve this problem, the consortium uses the regular financial system of the base agency. This is one major reason why the base agency is permanent. Government funds, such as those provided by PCARRD, are transferred to the base agency, which is responsible for accounting for the funds. It submits financial reports of disbursement to the government (in this case PCARRD). Grants for research projects, and other activities from other sources, go through the same system.

In some consortia, research foundations were established to receive grants from non-government sources, including foreign donors. These research foundations are private, non-profit, non-stock organizations. They are sanctioned by the government, through the Securities and Exchange Commission.

The Western Visayas Agriculture and Resources Research and Development Consortium (WESVARRDEC) operates the WESVARRDEC Research Foundation, Inc. PCARRD also operates one such foundation, the Philippine Agriculture and Resources Research Foundation, Inc. (PARRFI). Through these research foundations, some consortia and PCARRD currently manage donor funds to support special projects jointly implemented by the member-agencies.

Through these schemes the consortia also actively generate funds for collaborative activities and manage the funds themselves. The administrative costs of the projects are used for operating the consortia.

5. Sharing of Resources

One of the major reasons for establishing the consortia is to provide a venue for sharing of resources. Initially, these included funds from PCARRD for institution building. Usually, the following resources are shared: expertise (manpower), facilities, laboratory equipment, and funds to implement joint projects.

The easiest resource to share is expertise in terms of researchers' time and knowledge. The scientists serve as resource persons in joint training programs. They are involved in committees, evaluation panels, and commodity teams. One important aspect, which is often overlooked, is informal exchanges between researchers, which is enhanced by the consortia arrangement.

The most difficult resources to share are research facilities and laboratory equipment. To make this possible, some research centers offer their facilities to collaborating scientists in implementing joint projects. The researchers spend time in the center to carry out their experiments. Also, the agencies contribute counterpart funds to support collaborative projects.

The concept of sharing of resources led to the pooling of funds for operating the consortia. Each year, when the consortium budget is drawn up, the members indicate their contributions to the pool. Many agencies provide contributions in kind, which do not involve cash transactions.

VI. LESSONS LEARNED AND FUTURE CHALLENGES

The 15 years of experience of PCARRD and the national agricultural research and development system in operating the regional consortia is a learning process in coordinating research. Four issues can be gleaned from this Philippine experience.

1. Coordination must take place at each level of the research system. The type of coordination and coordinating organization must be fitted to each level. In the Philippines, the regional consortia were formed to coordinate research at the regional level.
2. Coordination, regionalization, and decentralization are related. One major factor that strengthened decentralization of research management in the Philippines was the decision to regionalize government line agencies in 1987. New structures and bodies were established to operate the government's regional programs. Part of the decision-making process of the government was shifted to the regions. The consortia had their mechanisms and structures in place when this occurred. They provided ready support to the regional thrusts of the government.
3. By decentralizing, the execution of research and relevance of the programs were improved. There are some factors that favored decentralization of research in the Philippines. The complex archipelagic nature of the country divided it into distinct agro-ecological zones. These areas have specific commodities and distinct ecological features that determine the research projects to be implemented. To provide effective support to agriculture, the research system needed to consider these distinct features. The consortia became the mechanism for focusing on regional priorities and needs.
4. Coordination is needed in a complex system. The consortia allow diverse implementing agencies that are close to the problems to feed into a single national research policy. By being involved in the implementation of an integrated regional program, these agencies also focus on regional needs and problems.

The lessons learned from operating the consortia, cited in this section, are based on actual experiences. It discusses the constraints, limitations, and opportunities offered by the consortia model.

1. Decentralization Has a Cost

Decentralizing research has its associated cost. This cost is one reason why many NARS continue to be centralized. If changes are made, the cost must be weighed against the benefits that will accrue in making the system and research more effective and efficient.

As mentioned earlier, the nature of research favors a decentralized system. At the operational level, Hobbs (1990) suggests that scientists exert power because of their specialized knowledge. NARS managers must provide the scientists with the flexibility needed to make research as free as possible from control at this level. But excessive decentralization leads to fragmentation and duplication of efforts. Many NARS cannot afford this, considering scarcity of resources.

ISNAR's experience shows that some NARS do not have a viable body to formulate research policy at the national level. This body is critical in providing central guidance at this level. Such a body is represented by a coordinating council in many Asian NARS. Experience shows that once formed, there must be considerable effort to maintain its viability as a centralizing mechanism.

Establishing new structures to implement a decentralized system may be costly especially if it leads to reorganization. With more dispersed structures, more people are needed in management. This means that many scientist-managers will have to spend more time for administration. This may cause a considerable shift from productive research. This point is critical if the disciplines they represent are important in implementing the research program.

Researchers work best where there is the least control over their activities and the environment in which they work. By decentralizing to the regions, there is an added level of coordination imposed on them. The scientists see this as another level of bureaucracy, which they perceive as control. This added level of coordination will have a negative effect if it leads to more bureaucracy instead of being facilitative.

2. Coordinating the Coordinators Is Different

By decentralizing, PCARRD's coordinating function was shifted to a lower level. The council's involvement with research implementors became one step removed. In the past, PCARRD dealt directly with individual implementing agencies. However, the council remains as the national policy making body of the system. By creating a mid-level, whose function is also coordination, a new decision-making level was introduced.

The regional consortia are coordinating bodies. PCARRD's new role is to coordinate their activities. Coordinating the coordinators is a different matter. Coordination became multi-level, and PCARRD's role was simplified. Currently, PCARRD deals with only 14 bodies instead of individual members of the national network. However, this shift has resulted in gaps created by decentralizing the management mechanisms to the region.

Coordinating the coordinators required new mechanisms. PCARRD had to modify some of its own mechanisms to suit the emerging regional system. A new coordinating unit within PCARRD was established for center management. PCARRD became an even more important source of research management expertise.

The consortia established their own coordinating mechanisms. Many of these were patterned after those introduced by PCARRD. The council continues to provide central policy guidance. The regional mechanisms are still synchronized at the national level. Thus it is still possible to integrate or aggregate research outputs at various levels.

With the involvement of more people, new innovations were introduced, with their attendant problems. However, these were seen as new opportunities for change, hence as challenges. As a result, the system became more varied. The mechanisms were better fitted to their own specific context and circumstances. New initiatives resulted in more appropriate mechanisms.

3. Critical Mass Is Important

There are preconditions to success in decentralizing research. One important factor is the presence of a critical mass of scientists to implement the regional research and development program. Capable research managers must also be available to coordinate and administer research. In the Philippines, both conditions were present when it was decided to decentralize the system.

There were 2438 researchers located in various parts of the country in 1986 (Pardey and Roseboom, 1989). This number has increased since then. Many of the scientists work in national and regional research centers. They represented the basic disciplines needed to carry out strategic, applied, and adaptive research. It was, then, possible to establish networks of stations focusing on regional needs. The critical mass of scientists in a center has been defined by PCARRD and is a very important factor to consider.

Research leaders were drawn from the regional scientists. Leadership remains a critical factor for success in the consortia. Because they are drawn from varied sources, there is great variability in leadership capacity across consortia. Management styles also vary, sometimes causing problems in management.

Maintaining the critical mass is imperative; hence periodic review is done by PCARRD. Training, for degree and non-degree programs, must be a part of the regional program. At the national level, PCARRD continues to train researchers on technical and research management topics. The training plan of the consortia includes regional seminars on the same topics. In way the multiplier effect is attained.

4. Formal vs. Informal Structures

When the national research and development system was formalized in 1972, it was done considering existing structures. A similar decision was made when the system started decentralizing in 1975. PCARRD used existing structures to strengthen research management. It was felt that networking using the consortium model was sufficient. It fitted the complex nature of the research system. Therefore, it was not necessary to reorganize in order to decentralize.

The new regional bodies were superimposed on the existing system. However, these remained as informal structures. Having legal status and formal structures might strengthen them further. However, the current mechanism is sufficiently flexible to attain the objectives of the consortia.

A NARS with other options may find that establishing formal structures and attaining a legal mandate may work better. This decision should be based on both opportunities and needs of the NARS, and viewed in the long term.

5. Achieving Balance

As indicated by Hobbs (1990), to compensate for the decentralized pull exerted by research and researchers, a NARS requires centralized guidance. But to achieve this centralized guidance, the centralizing mechanism must be seen by the decentralized entities to add more control over resources than it subtracts. They must gain some voice in authorizing resources by participating in policy-making. The important question faced by a research manager is how to achieve a balance.

Most NARS are centralized because the process of public-sector authorization is centralized. In many cases, a decentralized procedure for authorizing and allocating resources is not compatible with the current system. This may cause a major problem in implementing a decentralized system.

In the Philippines, the consortia establish regional priorities, which are the basis for allocating resources to programs at the research institute level. The regional program is an aggregate of the programs of various institutes. To be effective as a decisionmaker at the regional level, the consortia must be seen to affect the allocation of resources.

The consortia are the links between the centralized council and the highly decentralized centers. The weakness in the system is that these centers report administratively to their own agencies and not to PCARRD or the consortia. Hence, coordination at this level is imperative to attain changes.

6. Inter-Agency and Multi-Disciplinary Approach

The consortia bodies follow the team approach used by PCARRD at the national level. For example, the regional commodity teams include senior scientists who are involved in managing research. This is reflected in the structure of the consortia and the nature of regional integrated programs. This approach gives the technical credibility to the system. On the other hand, this results in a conflict of interests when scientists become involved in the approval of projects and in allocating resources.

The RRDCC, RTWG, and RCTs are examples of bodies established by the consortia to implement this scheme. Through these committees and teams, the direct involvement and feedback from the member-agencies are assured. It also provides informal flow of information among researchers and

managers within the regional network. The participation of development workers and users in these bodies provides a strong input into the programs.

In many NARS, inter-disciplinary teams already exist, acting as advisory bodies. By refocusing their efforts on the actual levels where decision-making occurs, they can be effective mechanisms for decentralizing the system. It is important to determine the composition of these bodies. Their membership should broadly reflect all those involved in the regional network. In this way all agencies accept the consortium as their own and, therefore, they are responsible for its success.

7. The Consortium is a Network

As already mentioned, the consortium works as a regional network. Plucknett and Smith (1984) cite seven characteristics of a successful network. These include the following:

- the problem is clearly defined and a realistic research agenda is drawn up;
- the problem is widely shared;
- there is strong self-interest;
- participants are willing to commit resources;
- external funding only facilitates establishment;
- participants have sufficient training and expertise to contribute;
- there should be strong leadership.

These authors show that the above conditions must be met to ensure successful networking. The Philippine experience also indicates that these points are critical. However, differences in levels of attainment of these conditions cause variations in implementing the network approach in the consortia. For example, leadership capability varies across consortia. Sometimes, leadership styles and commitments cause some management problems.

Networking remains a viable option for decentralizing the system. However, like all networks, the scheme depends upon the continued active participation of all agencies. As long as it gains benefits, an agency maintains its linkages to the others and continues to participate in the consortium.

8. Critical Role of Universities

Universities have always been an important part of the Philippine research system. The network includes both public and private universities. State colleges and universities have the traditional trilogy of functions: education, research, and extension. This was patterned after the land-grant universities of the United States. These universities have built a strong core of scientists through aggressive staff development. Their participation in the network has always been a strong point of the system.

When the national and regional centers were identified, 10 out of 12 such centers were university-based. Many of the national and regional research institute are based at these universities. Many of these universities became the core from which the regional consortia were established. They provided the core group of scientists and leaders in the region. That they continue to do so has been critical in maintaining the consortia.

In many NARS, universities are not part of the system. This is unfortunate because the universities have the manpower and capability to support agricultural research. If, by decentralizing, they become integrated into the system, it may have a long-lasting impact on the NARS.

VII. IMPLICATIONS TO OTHER NARS

What can other NARS learn from the Philippine experience? If the trend to decentralize the NARS continues, the Philippine model can be an option for research managers to examine and ponder. What are its implications to other NARS?

A public NARS is accountable to the government and its clients to develop relevant technologies and information. The research manager must facilitate the NARS carrying out its critical functions to attain this objective in the most effective and efficient manner.

One possible option is to strengthen decision-making at all levels of the NARS. But the manager must take note of what Hobbs (1990) emphasized, that the decentralizing power (from below) must be balanced with centralizing mechanisms (from the top). Otherwise, decentralization may result in an ineffective and highly fragmented NARS. This is confirmed by Nogueira (1989), who says that decentralization measures must include mechanisms that will ensure control from above as well as facilitate regional and local integration.

But research is not a typical activity. It involves a complex, interactive, and indefinite process. It often goes in unpredictable directions and produces unanticipated results. In the core of the process are the scientists who work at the research station (operational) level. For scientists to be most productive, they need an optimal and flexible environment. Management must ensure that these conditions occur at that level. They must also continue to provide central direction to balance the pull to disaggregate caused by these scientists.

The outputs of research are new and improved technologies, new information to add to world knowledge, and tools to improve science. The role of the NARS is to provide these products and ensure that they are relevant to users' needs. It means that users and scientists must be brought into the decision-making process. By decentralizing, this becomes possible. These groups, who have not traditionally participated in management, become active participants. It allows the NARS to better rationalize research and justify how resources are allocated.

The challenge to the NARS is to keep the balance in decision-making in a multi-level system. The success of decentralization depends upon the willingness of the participants, whether individual scientists or institutes, to cooperate. Therefore, the coordinating mechanism must allow the participants to derive benefits, such as gaining additional influence in decision-making or capturing new resources.

There are basic conditions that make decentralization a viable option, as discussed in this paper. But each research system is unique and should be considered as such. However, some of the issues cited in this paper may be relevant to other NARS.

It is difficult to transfer new concepts; more so entire structures because of basic differences across systems. Sometimes it is easier to modify parts of a system in the light of the experiences of others. This paper should be seen in this context.

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ACRONYMS

ARP	Agricultural Research Project
BICARRD	Bicol Consortium for Agriculture and Resources Research and Development
CEMARRDEC	Central Mindanao Agriculture and Resources Research and Development Consortium
CLARRDEC	Central Luzon Agriculture and Resources Research and Development Consortium
CTA	Technical Centre for Agricultural and Rural Cooperation
CVARRD	Cagayan Valley Agriculture and Resources Research and Development
CVCIRRD	Central Visayas Consortium for Integrated Research and Development
DA	Department of Agriculture
DANR	Department of Agriculture and Natural Resources
DENR	Department of Environment and Natural Resources
DOST	Department of Science and Technology
DSE	German Foundation for International Development
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuaria (Brazil)
HARRDEC	Highland Agriculture and Resources Research and Development Consortium
IADS	International Agricultural Development System
ILARRC	Ilocos Agriculture and Resources Research Consortium
INIA	Instituto de Investigacion Agropecuario (Chile)
INIAA	Instituto Nacional de Investigacion Agropecuaria y Agroindustrial (Peru)
INTA	Instituto Nacional de Tecnologia Agropecuaria (Argentina)
ISNAR	International Service for National Agricultural Research
I.GARC	La Granja Agricultural Research Center
MOA	Memorandum of Agreement
NARDS	National Agricultural Research and Development System
NARS	National Agricultural Research System
NEDA	National Economic Development Authority
NOMCARRD	Northern Mindanao Consortium for Agriculture and Resources Research and Development
NSDB	National Science and Development Board
NSTA	National Science and Technology Board
PARRDN	Philippine Agriculture and Natural Resources Research and Development Network
PARRFI	Philippine Agriculture and Resources Research Foundation, Inc.
PCARRD	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development
PCAMRD	Philippine Council for Aquatic and Marine Resources and Development
RCT	Regional Commodity Team
RRDCC	Regional Research and Development Coordinating Committee
RTWG	Regional Technical Working Group
SMARRDEC	Southern Mindanao Agriculture and Resources Research and Development Consortium
STARRDEC	Southern Tagalog Agriculture and Resources Research and Development Consortium
TDRCD	Technology Development and Regional Coordination Division
USAID	United States Agency for International Development
VICARP	Visayas Integrated Agricultural Research Program
VISCA	Visayas State College of Agriculture
WESMARRDEC	Western Mindanao Agriculture and Resources Research and Development Consortium
WESVARRDEC	Western Visayas Agriculture and Resources Research and Development Consortium