

Evaluating Capacity Development in Planning, Monitoring, and Evaluation

A Case from Agricultural Research

D. Horton,
R. Mackay,
A. Andersen,
L. Dupleich

About ISNAR

Mission

The International Service for National Agricultural Research (ISNAR) assists developing countries in improving 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.

Impact

To maximize the impact of its work in developing countries, ISNAR focuses on three objectives:

- enhancing the capacity of agricultural research organizations to respond to their clients' needs and to emerging challenges
- expanding global knowledge on agricultural research policy, organization, and management
- improving developing countries' access to knowledge on agricultural research policy, organization, and management

Background

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 its headquarters in The Hague, the Netherlands, on September 1, 1980.

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ISNAR's Research Report series presents the findings of research conducted by the institute and its partners in the area of agricultural research policy, organization, and management.

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August 2000

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Foreword

Issues of capacity development, governance, and accountability have moved to center stage on development cooperation agendas. Managers and policymakers in the South and those responsible for development cooperation in the North are searching for new and better means to strengthen organizational capacity and performance. They also need to evaluate the results of capacity development programs.

This Research Report, based on an evaluation of an innovative capacity development project, addresses both these concerns. The object of the evaluation was a regional project carried out by ISNAR and its collaborators aimed at strengthening agricultural research management in Latin America and the Caribbean. The project focused on the key management areas of planning, monitoring, and evaluating agricultural research. Its guiding philosophy was that intended beneficiaries of capacity development efforts – in this case, the managers of agricultural research organizations – should be involved in all aspects of planning, implementing, and evaluating the project.

The evaluation itself was innovative too. Despite the great interest in capacity building, surprisingly little effort has gone into understanding the “theories of action” that underpin capacity development programs or into developing practical means to gauge the impact of capacity-building work. This report presents a novel conceptual framework, developed specifically for evaluating capacity development efforts. It outlines the combination of quantitative and qualitative methods that ISNAR and its collaborators used to collect and analyze relevant data and to synthesize and present the results. Both the concepts and methods should be of interest to evaluators, who are increasingly engaged in organizational assessments.

The main audience for this Research Report consists of agricultural research managers and PM&E specialists in Latin America and the Caribbean, for whom issues of PM&E and management of capacity building relate directly to pressing concerns of institutional sustainability and performance. Many of these professionals participated in the PM&E project and its evaluation. To them I express ISNAR’s profound gratitude for their many contributions and insights. The report is also intended for a broader audience of managers, evaluators, and capacity development practitioners who are seeking insights into capacity development processes and methods for evaluating capacity development programs.

Stein W. Bie
Director General, ISNAR
August 2000

Abstract

Capacity development has moved to center stage on the agendas of development organizations. As technologies and institutions are changing fast and budgets for overseas development assistance are declining, strengthening the capabilities of individuals, organizations, and institutions is essential to ensure that development efforts are sustainable and poverty is eradicated. Substantial sums are being invested in the development of organizational and institutional capacities. Yet, the design and management of capacity development efforts leaves much to be desired. Few capacity development programs have been systematically and thoroughly evaluated to test their underlying theories and assumptions, document their results, and draw lessons for improving future programs. This report describes the concepts and methods used to evaluate a regional capacity development project in Latin America. The project under study aims to strengthen planning, monitoring, and evaluation (PM&E) in agricultural research organizations in the region. The report outlines the procedures employed in five evaluation studies and summarizes the results of each study. It then presents consolidated findings in response to three evaluation questions: What were the main contributions of the project to agricultural research management? What lessons can be learned to improve the design of future capacity development programs? What lessons can be learned to improve future evaluations of capacity development?

Resumen

El desarrollo de capacidades ha avanzado hacia una posición central en las agendas de las organizaciones de desarrollo. Como las tecnologías y las instituciones están cambiando rápidamente y los presupuestos para el apoyo al desarrollo en ultramar están declinando, es esencial desarrollar las capacidades de los individuos, las organizaciones e instituciones para asegurar que los esfuerzos de desarrollo sean sostenibles y la pobreza sea erradicada. Se invierte sumas substanciales en el desarrollo de capacidades organizacionales e institucionales. Sin embargo, el diseño y manejo de los esfuerzos de desarrollo de capacidades dejan mucho que desear. Muy pocos programas de desarrollo han sido evaluados sistemática y cuidadosamente para probar las teorías y suposiciones fundamentales, documentar sus resultados y extraer lecciones para mejorar los programas futuros. Este informe describe los conceptos y métodos usados para evaluar el proyecto regional para el desarrollo de capacidades en América Latina. El proyecto bajo estudio tiene como objetivo fortalecer la planificación, el seguimiento y la evaluación (PSyE) en las organizaciones de investigación agrícola en la región. El informe bosqueja los procedimientos empleados en cinco estudios de evaluación y resume los resultados de cada estudio. Finalmente presenta hallazgos consolidados en respuesta a tres preguntas evaluativas: ¿Cuáles fueron las principales contribuciones del proyecto a la gestión de la investigación agrícola? ¿Qué lecciones se pueden aprender para mejorar el diseño de futuros programas de desarrollo de capacidades? ¿Qué lecciones pueden ser aprendidas para mejorar las evaluaciones futuras del desarrollo de capacidades?

Abrégé

Le développement des capacités occupe désormais une place primordiale dans les programmes de travail des organisations d'aide au développement. En effet, vu l'évolution rapide des technologies et des institutions et le déclin des fonds réservés à la coopération au développement, il est essentiel de renforcer les capacités personnelles, organisationnelles et institutionnelles pour assurer la durabilité des efforts de développement et supprimer la pauvreté. D'importantes sommes ont été investies dans le développement des capacités des organisations et des institutions. Mais la conception et la gestion des efforts de développement des capacités laissent souvent à désirer. Peu de programmes ont été soumis à

des examens systématiques et approfondis permettant d'évaluer les hypothèses et théories qui les sous-tendent, de consigner les résultats obtenus et de tirer des leçons générales qui contribueront à l'amélioration de programmes futurs. Le présent rapport présente les concepts et les méthodes adoptés dans l'évaluation d'un projet régional de développement des capacités mené en Amérique latine. Le but de ce projet est de renforcer la planification, le suivi et l'évaluation (PS&É) des organisations de recherche agricole opérant dans la région. Ce rapport fournit les grandes lignes des procédures suivies dans cinq études d'évaluation et une récapitulation des résultats de chaque étude. Des conclusions générales ont été tirées et présentées sous la forme de réponses aux trois questions suivantes: quelles sont les contributions principales du projet à la gestion de la recherche agricole ? Quelles leçons peuvent être appliquées pour améliorer la conception de programmes futurs de développement des capacités ? Quels enseignements permettront d'améliorer de futures évaluations du domaine « développement des capacités » ?

Acronyms

ACIAR	Australian Centre for International Agricultural Research
CARDI	Caribbean Agricultural Research and Development Institute
CEDAF (Dominican Republic)	Centro para el Desarrollo Agropecuario y Forestal
CENICAFE (Colombia)	Centro Nacional de Investigaciones de Café
CGIAR	Consultative Group on International Agricultural Research
CIAT (Bolivia)	Centro de Investigación Agrícola Tropical
CIAT (Colombia)	International Center for Tropical Agriculture
CIMMYT	Centro Internacional de Mejoramiento de Maíz y Trigo
CONITTA (Costa Rica)	Comisión Nacional de Investigación y Transferencia de Tecnología Agropecuaria
CORPOICA (Colombia)	Corporación Colombiana de Investigación Agropecuaria
CTA	Technical Centre for Agricultural and Rural Cooperation
DANIDA	Danish International Development Agency
DIA (Paraguay)	Dirección de Investigación Agrícola
EMBRAPA (Brazil)	Empresa Brasileira de Pesquisa Agropecuária
FAO	Food and Agriculture Organization of the United Nations
FONAIAP (Venezuela)	Fondo Nacional de Investigaciones Agropecuarias
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICA (Colombia)	Instituto Colombiano Agropecuario
ICTA (Guatemala)	Instituto de Ciencia y Tecnología Agrícolas
IDB	Inter-American Development Bank
IDIAP (Panama)	Instituto de Investigación Agropecuaria de Panamá
IDRC	International Development Research Centre
IFAD	International Fund for Agricultural Development
IICA	Instituto Interamericano de Cooperación para la Agricultura
IMF	International Monetary Fund
INIA (Chile)	Instituto Nacional de Investigaciones Agropecuarias
INIA (Uruguay)	Instituto Nacional de Investigación Agropecuaria
INIFAP (Mexico)	Instituto Nacional de Investigaciones Forestales y Agropecuarias
INTA (Argentina)	Instituto Nacional de Tecnología Agropecuaria
ISNAR	International Service for National Agricultural Research
MAG (Costa Rica)	Ministerio de Agricultura y Ganadería
MINAG (Cuba)	Ministerio de Agricultura
MIS	management information system
NARIs	national agricultural research institutes
NAROs	national agricultural research organizations
NARS	national agricultural research system(s)
NIE	new institutional economics
NUD.IST	Non-Numerical Unstructured Data Index Searching and Theory-Building
OECD	Organisation for Economic Co-operation and Development
PM&E	planning, monitoring, and evaluation
PM&E Project	ISNAR's project: "Strengthening the planning, monitoring, and evaluation of agricultural research in Latin America and the Caribbean"
R&D	research and development

SACCAR	Southern African Centre for Co-operation in Agricultural & Natural Resources Research and Training
SDC	Swiss Agency for Development and Cooperation
SINCITA (Cuba)	Sistema Nacional de Ciencia y Tecnología Agraria
SIRI (Jamaica)	Sugar Industry Research Institute
TAC Secretariat	Technical Advisory Committee of the CGIAR
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WTO	World Trade Organization

Executive Summary

Capacity development has moved to center stage on the agendas of development organizations. Substantial sums are being invested in capacity development programs. Yet, their design and management leaves much to be desired. Marred by untested, unrealistic assumptions, the results of many programs fall short of their goals and expectations.

Evaluations are needed to test the theories and assumptions on which capacity development programs are based, to document their results, and to draw lessons for improving future programs. However, few capacity development programs have been systematically and thoroughly evaluated.

Since 1996, the International Service for National Agricultural Research (ISNAR) has worked to develop methods for evaluating capacity development programs in agricultural research and development organizations. From 1997 to 1999, this work focused on an in-depth evaluation of a capacity development project in Latin America and the Caribbean. The objective of the project was to strengthen planning, monitoring, and evaluation (PM&E) in agricultural research organizations.

The evaluation of the PM&E project sought to answer four broad questions:

1. What were the main contributions of the PM&E project to agricultural research management?
2. How were the project's contributions brought about?
3. What lessons can be learned to improve the design of future capacity development programs?
4. What lessons can be learned to improve future evaluations of capacity development programs?

The evaluation entailed an action research process of clarifying concepts and issues, developing evaluation frameworks, and testing methods for collecting and analyzing data and for synthesizing and interpreting the results.

Evaluation concepts and methods

The conceptual framework for the evaluation drew on an organizational assessment framework developed by Universalia and the International Development Research Centre (IDRC) and the underlying logic model or "theory of action" of the PM&E project.

The Universalia-IDRC framework views an organization's performance as a function of its operational environment (the legal, social, and economic context), its motivation (internal factors that influence the direction, coherence of activities, and energy displayed), and its capacity (the organization's staffing, resources, structure, management systems, and linkages with others). Organizational performance is defined in terms of effectiveness, efficiency, relevance to stakeholders, and sustainability.

The PM&E project was carried out from 1992 to 1998. It sought to bring about changes in organizations by producing and disseminating information, providing training, and by facilitating processes of organizational change.

Beginning in 1992, reference books and training materials were prepared for use at training events and workshops and for distribution to managers and libraries throughout Latin America and the Caribbean. Beginning in 1993, a regional group of trainers was established and its members organized and delivered a number of sub-regional training events. Several regional workshops were also organized to plan and review project activities and to disseminate its results. Beginning in 1996, the project provided direct support for organizational change processes in selected organizations, known as "pilot cases." These were in Costa Rica, Cuba, Panama, and Venezuela.

The project was highly participatory. Managers from agricultural research organizations participated in project planning workshops. They also worked in teams to develop a set of training materials. Later, they tested and revised the materials and employed them at training events. Managers were also actively involved in reviewing and evaluating the project.

Since the project worked with and through agricultural research managers, the organizational assessment framework was adapted and applied at both the level of the individual and the level of the organization. Based on the evaluation framework, five complementary evaluation studies were planned and carried out:

1. review and documentation of the project's design, strategies, activities, and outputs
2. study of the impacts of project publications on individuals and organizations
3. study of the effects of training done in the project
4. assessment of the project's contributions to change in the pilot case organizations
5. assessment of the project's contributions to change in PM&E in nine other organizations throughout the region

The PM&E project's contributions to agricultural research management

Contributions at the individual level

The evaluation studies indicate that the project contributed to the knowledge and ability of numerous individuals to plan, monitor, and evaluate agricultural research. Project publications provided useful information on PM&E. Training activities provided participants opportunities to exchange information, share experiences, and experiment with new management approaches and techniques.

The project's most significant effects at the individual level were in the realm of motivation. Managers became more aware of the need for organizational change. Exposure to the PM&E project led many professionals to view organizational change in a positive light and to increase their level of engagement in organizational improvement efforts.

The evaluation studies indicate that managers also gained appreciation of the value of PM&E as a set of management tools, becoming motivated to improve their PM&E activities and associated management practices. Many managers who participated in workshops, training events, and pilot case activities assimilated new concepts and tools and made effective use of them in their own management practices.

All the evaluation studies identified contributions of project publications and training materials to individuals' knowledge and skills in PM&E and in strategic management. The training study, the pilot case self-assessments, and the survey of agricultural leaders provide evidence of enhanced professional capacity for managing organizational change, particularly in the pilot case organizations.

Many of those who participated in project activities became more capable managers. Most changes in PM&E were made at the level of research activities and projects that are managed directly by individuals who were involved in the project. Some, but fewer, changes were made at higher levels, where organization-wide decisions were required for implementation.

In addition to improving management knowledge and skills, the project contributed to the capacity of many individuals to organize and deliver relevant management training for other professionals. Strengthened management training capacity is a valuable resource that many organizations continue to tap to upgrade their management skills and practices. Enhanced training capacity was also transferred to and employed by universities in the region.

Contributions at the organizational level

While the project's contributions to individual motivation, capacity, and performance are many, significant improvements in integrated PM&E systems were registered in only a few organizations. Most effective organizational change occurred where (a) the environment was conducive to change (e.g., there was strong external pressure for change), (b) top managers provided leadership for change, (c) a critical mass of staff was involved in and committed to the change process, (d) appropriate institutional innovations were made available or developed, (e) resources were provided for change (e.g., dedicated time of key staff and budgets for training and facilitation), and (f) there was adequate management of the change process.

Two key factors appear to have constrained the effects of the PM&E project in many organizations: lack of support of senior managers for large-scale organizational change and the small proportion of staff members who participated in project activities.

Where fundamental change did occur, the organization itself took the lead with the project playing a catalytic, supportive, and essentially complementary role.

Organizational improvement occurred mainly in planning. Many organizations had recently undertaken strategic planning exercises, and the project provided concepts, tools, guidance, and support for many of these efforts. Improvements were also made in operational planning for research centers and projects. Some improvements were made in monitoring, particularly through enhancement of project management systems. Fewer advances were made in evaluation, which continues to be the weakest phase in the management cycle.

Recent years have seen a strong move toward the organization of research in projects. In its training, publications, and facilitation the PM&E project supported this trend by highlighting the importance of the project as a basic unit of management and by offering principles and tools for improving project formulation and management.

Upon completion of the PM&E project, integrated PM&E systems were expected to be operating in at least four organizations in the region. Such systems were expected to integrate planning, monitoring, and evaluation activities, use standardized PM&E instruments and procedures, and have adequate personnel and resources to perform the functions adequately. This goal was not achieved. With guidance, and in a few cases support, from the project, several organizations took steps to strengthen and integrate their PM&E systems. Such efforts were most vigorous and thorough in the pilot case countries. Other organizations improved some aspects of their PM&E systems, but with less overall integration.

This experience indicates that a fully integrated PM&E system should be viewed as a long-term goal for organizations to aspire to, not as something that can be implemented within a two- or three-year period.

How were project contributions brought about?

The project employed three main strategies: the information strategy, the training strategy, and the pilot case strategy. Each had a different combination of reach and intensity of interaction. The information strategy had the broadest reach and the lowest intensity; the training strategy had intermediate levels of reach and intensity; and the pilot case strategy had the shortest reach and the highest intensity of interaction. Evaluation results show the intensity of interaction to be positively correlated to the project's contributions to capacity development at both the individual and organizational levels.

Project publications were distributed widely within the region and elsewhere. Many individuals found these publications to be useful in their work. They especially valued the training manuals on strategic

planning and strategic management. Nonetheless, information alone seldom led to significant capacity development, particularly at the organizational level.

The project offered training in PM&E to some 150 managers. Two month-long regional workshops were organized to train trainers and prepare the project's training materials. Six week-long training events were organized later to train mid-level managers in PM&E concepts and tools. Evaluation results indicate that training played an important role in change processes in the pilot cases, as well as in a few other organizations. But alone training was a relatively weak tool for bringing about organizational change. To explain this in terms of the evaluation framework, training motivated individuals and contributed to their capacity. The working environment, however, often hampered changes in their management practices. Additionally, most improvements in PM&E require large-scale organizational change that cannot be made by staff working without explicit support of senior management decisions.

The project's contributions were greatest in the pilot case organizations, where top-level commitment to change was strong and where interaction between managers and the project team was most intense. According to the training study, the project had more impact on individuals' motivation and their working environments in the pilot case organizations than elsewhere. At the organizational level, changes were most evident in the pilot cases in all four of the organizational dimensions: motivation, capacity, environment, and performance.

The pilot cases became the centerpiece of the project's work in the region. They served as testing sites for PM&E concepts and methods and provided practical experiences for enriching the project's training offerings. In this way, the pilot cases became a source of dynamism and renewal for the project's information and training activities.

The project team used participatory approaches to plan, implement, review, and evaluate its activities. A core group of individuals was involved in a series of events, including workshops lasting from a week to more than a month. Most of the project work was done by groups. Through group work, individuals increased their knowledge, skills, and abilities and also became more motivated. Over time, they developed team spirit and a sense of ownership of the project's goals and strategies.

The evaluation studies indicate that individuals who participated most frequently and intensively in the project experienced the greatest changes in their motivation, capacity, and performance. The group of PM&E specialists that collaborated in the project over time became an acknowledged resource for improving management in the region. ISNAR has mobilized these specialists on several occasions for training and technical missions in other countries. Group members have also been called upon by their own and other organizations to support capacity development efforts in PM&E.

Lessons for capacity development and for evaluation

A number of lessons were learned during the evaluation that may be of use for improving the design and management of future capacity development programs. These lessons, discussed more extensively in Chapter 5, are summarized here:

1. Intended beneficiaries should play central roles in designing and managing capacity development efforts.
2. Capacity development programs should articulate and test their underlying theories and assumptions.
3. Capacity development programs should focus their attention on organizations that are committed to change.
4. Capacity development programs should go beyond providing inputs to facilitating change processes.
5. Capacity development programs need to work simultaneously on many fronts.

6. Capacity development programs should adapt themselves to the needs and circumstances of the organizations they support, not vice versa.
7. Integrating PM&E is crucial for promoting individual and organizational learning and improvement.

The following lessons may be useful for improving the evaluation of capacity development programs:

1. Evaluation of a capacity development program needs to draw on three types of theory: a theory of the program, a theory of performance (individual or organizational), and a theory of change.
2. Since evaluation of capacity development programs is a relatively new field of study, considerable work is needed to clarify key concepts and terms.
3. The impact metaphor should be avoided in evaluating capacity development.
4. General concepts need to be carefully translated into locally meaningful terms, and vice versa.
5. Participation of organizational members and stakeholders is essential in the evaluation of a capacity development program.
6. Triangulation is especially important in evaluating organizational capacity development.
7. Evaluation of a capacity development program should be designed and managed so as to contribute to the capacity development process.

1. Introduction

Growing interest in capacity development

Development agencies and governments are placing increasing emphasis on strengthening the capacities of organizations and institutions in developing countries. A recent OECD document (1997: 3) refers to the shift in emphasis from capital-intensive projects to institutional strengthening as a “paradigm shift” in development cooperation. Growing interest in capacity development stems from the perceived failure of technically focused aid strategies. Many development projects have led to increased dependence on aid rather than to sustained growth and development (e.g., Catterson and Lindahl, 1999).

Capacity development is seen as a way to strengthen local organizations so they can assume responsibility for designing, managing, and sustaining development in an era of declining external aid. The accelerating pace of technical and institutional change has made capacity development an urgent priority. Continuous development of new capacities is essential for individuals and organizations to compete and prosper in today’s globalizing economy and society.

Many types of capacity development programs are being launched. These range all the way from training to develop individuals’ skills to broad government reforms aimed to enhance nations’ capacities to manage their affairs. This Research Report is concerned with capacity development at the intermediate level of organizations and institutions. Definitions of these and other terms used in this report are provided in Chapter 2.

There are no universal formulas or blueprints for organizational capacity development. Many attempts to transfer organizational models from the North to the South have failed. Experience shows that countries and organizations need to develop their capacity in locally appropriate ways (Cohen, 1993; Hilderbrand and Grindle, 1995). Capacity development is a complex process and capacity development programs involve more social experimentation than social engineering. For this reason, innovative management and learning by doing are essential for their success (Horton, 1999).

Some programs under way are likely to contribute significantly to the capacity of countries to manage their own development. Others may have little or no impact. Some may actually deplete capacity – for example, by drawing local professionals to work in international organizations.

Evaluation of capacity development programs

The ultimate impact of the new generation of capacity development programs depends in no small measure on the appropriate use of evaluation. Those who design programs must first evaluate existing capacities and identify important gaps to fill. Program managers need to periodically monitor their activities and evaluate results in order to improve the effectiveness of their efforts. Those who wish to learn from experience and improve future programs will need to

Capacity development has become a rallying cry among donor agencies. It is heralded as the missing link in development, as a primary objective of aid and a pre-condition to achieve sustainable development impact. It reflects a “paradigm shift” in development cooperation (OECD, 1997:3).

An impact evaluation is the most difficult type of evaluation to design and conduct... It will be difficult to meet the expectations of donors and borrowers that evaluations can and should be designed to determine cause and effect relations for many if not most development initiatives (Rist, 1995: 168–170).

draw lessons from ex post evaluations. Finally, those who fund capacity development initiatives need information on results and impacts in order to justify continuing support.

Few capacity development programs have systems for monitoring or evaluating changes in institutional development. Moreover, there are few appropriate methods to evaluate such programs' processes, outputs, and impacts (Kruse et al., 1998). Common practice is for development projects and programs to be reviewed by panels of external experts at the request of funding agencies. These reviews are typically guided by ambitious terms of reference that call for assessment of the project's relevance, design, management, and activities, as well as its social, economic, and environmental impacts (Castillo, 1999). In contrast to expectations, the budgets and time made available for external evaluations are generally quite limited. As a result, evaluations seldom systematically gather or analyze information on impacts.

It is difficult and costly to evaluate the impacts of any type of program, particularly capacity development programs. In economics and the social sciences, impact assessment is generally viewed as requiring a rigorous experimental or quasi-experimental research design that allows precise measurement of treatment effects (Alston, Norton, and Pardey, 1995; Mohr, 1992; Rossi, Freeman, and Lipsey, 1999). Such designs have been successfully applied to measure the impacts of agricultural research, public health, and some other types of public-sector programs. However, their application to capacity development programs is problematic.

Agricultural research has a strong tradition of economic impact assessment – so strong in fact that the term “impact assessment” is often considered synonymous with economic evaluation (Alston, Norton, and Pardey, 1995; Echeverría, 1990; Pardey, Roseboom, and Craig, 1999). Anderson and Dalrymple (1999: 41–42) note that impact assessment varies in difficulty according to the type of program. Assessing the impact of new cultivars is perhaps least difficult. Assessing the impacts of crop management and soil and water management research are higher on the ladder of complexity. Participatory research approaches add additional complexity. Most complex of all is assessing the impact of policy research and institutional change.

Moore, Stewart, and Hudock (1995: 55) identify five problems in evaluating institutional and organizational development: (1) the field is wide, diffuse, and poorly defined; (2) institutional and organizational development are not generally considered goals in themselves, but as means to achieve other development goals; (3) the process of institutional development is a “low specificity” activity with few in-built mechanisms to identify and “publicize” poor performance; (4) the attribution problem, common to most evaluation, is especially acute in the case of institutional development, where results may emerge only over a long period of time; and (5) organization and management theory, the academic disciplines most relevant to organizational development, are underdeveloped in the sense that there is no agreement on a common body of central concepts. Goldsmith (1993) emphasizes definitional, attribution, and temporal problems.

Several frameworks for diagnosing or assessing organizations and capacity development programs have been published.¹ These generally prescribe collaborative approaches and the participation of program leaders and beneficiaries in evaluation. Yet few reports exist on practical applications of these frameworks and approaches in evaluating the impacts of capacity development programs.

The present Research Report aims to contribute to the discourse on capacity development and to the development of practical evaluation concepts and methods. It does so by reporting on the concepts and methods employed and the results of one such evaluation of a capacity development program in agricultural research management.

Institutional context of the evaluation

The evaluation reported on here was carried out for the International Service for National Agricultural Research (ISNAR), one of 16 international centers affiliated with the Consultative Group on International Agricultural Research (CGIAR). The CGIAR is a network of international agricultural research centers dedicated to enhancing food security, eradicating poverty, and preserving the natural environment in developing countries through research and related development activities. The CGIAR is sponsored by UNDP, UNEP, and the World Bank. It is funded by a consortium of 50 bilateral and multilateral donor organizations (Anderson and Dalrymple, 1999).

ISNAR's mission is to enhance the performance of agricultural research organizations and systems in developing countries. ISNAR pursues this mission through applied research, training, and professional services in the areas of agricultural research policy, organization, and management (Horton, 1999; ISNAR, 1999).

In developing regions, external development agencies and national governments have for many years supported the development of physical infrastructure and technical and scientific capacity in agricultural research organizations. In contrast, relatively little attention has been paid to strengthening research policies, organization, and management. As a result of this investment pattern, in Latin America and elsewhere, the growth of scientific capacity has far outstripped the development of managerial capacity in agricultural research systems (Anderson and Dalrymple, 1999: 70; Ardila, 1997; Novoa and Horton, 1994; Purcell and Anderson, 1997: 8; Trigo, 1995: 11).

From 1992 to 1997, ISNAR implemented a regional capacity development program to strengthen planning, monitoring, and evaluation (PM&E) in agricultural research organizations in Latin America and the Caribbean. Project activities included preparation of reference and training materials on PM&E, formation of a regional team of management trainers, delivery of training workshops, and facilitation of organizational change processes in selected or-

International agricultural research is a small but critically important part of the global research system... It is a sad fact of life that study of the efficacy of agricultural research is remarkably under-attended (Anderson, 1998: 1149 and 1154).

1. See, for example, Clegg, Hardy, and Nord, 1996; Grindle, 1997; Harrison, 1994; Lusthaus, Anderson, and Murphy, 1995; Lusthaus et al., 1999; Montague, 1997; Taschereau, 1998; and UNDP, 1998.

The increasing demands being placed on research systems contrast starkly with the lack of institutional innovation in research-system management and organization and the stagnation or decline in funding for agricultural research... (Byerlee and Alex, 1998: 16, 17).

ganizations known as “pilot cases.” The project team worked in a highly participatory and collaborative mode with professionals from the region throughout all phases of the project’s planning and implementation.

In 1997, ISNAR evaluated the impacts of the PM&E project as part of a larger effort to advance concepts and methodologies for evaluating capacity development efforts in the field of agricultural research and development. The PM&E project was selected for in-depth evaluation for several reasons: First, it had applied a range of capacity development strategies, with results that were of interest to ISNAR and its partners. Second, as a regional initiative, the project had acquired considerable experience with capacity development in a number of different situations and organizations, and the project’s activities were well documented. Third, the project had been under way long enough for some impacts to be observable. In 1994, an external evaluation had recommended documentation and dissemination of its strategies and results (Tollini and Siri, 1994). Since there were plans for a follow-up project, results of an impact study would be of direct use to the project team in planning future work.

Objectives and scope of the evaluation

In its evaluation work ISNAR seeks to contribute to the discourse on issues associated with evaluating the impacts of capacity development programs. It also seeks to develop methods for evaluating such programs and, ultimately, to provide practical guidelines for evaluating programs to develop capacity.

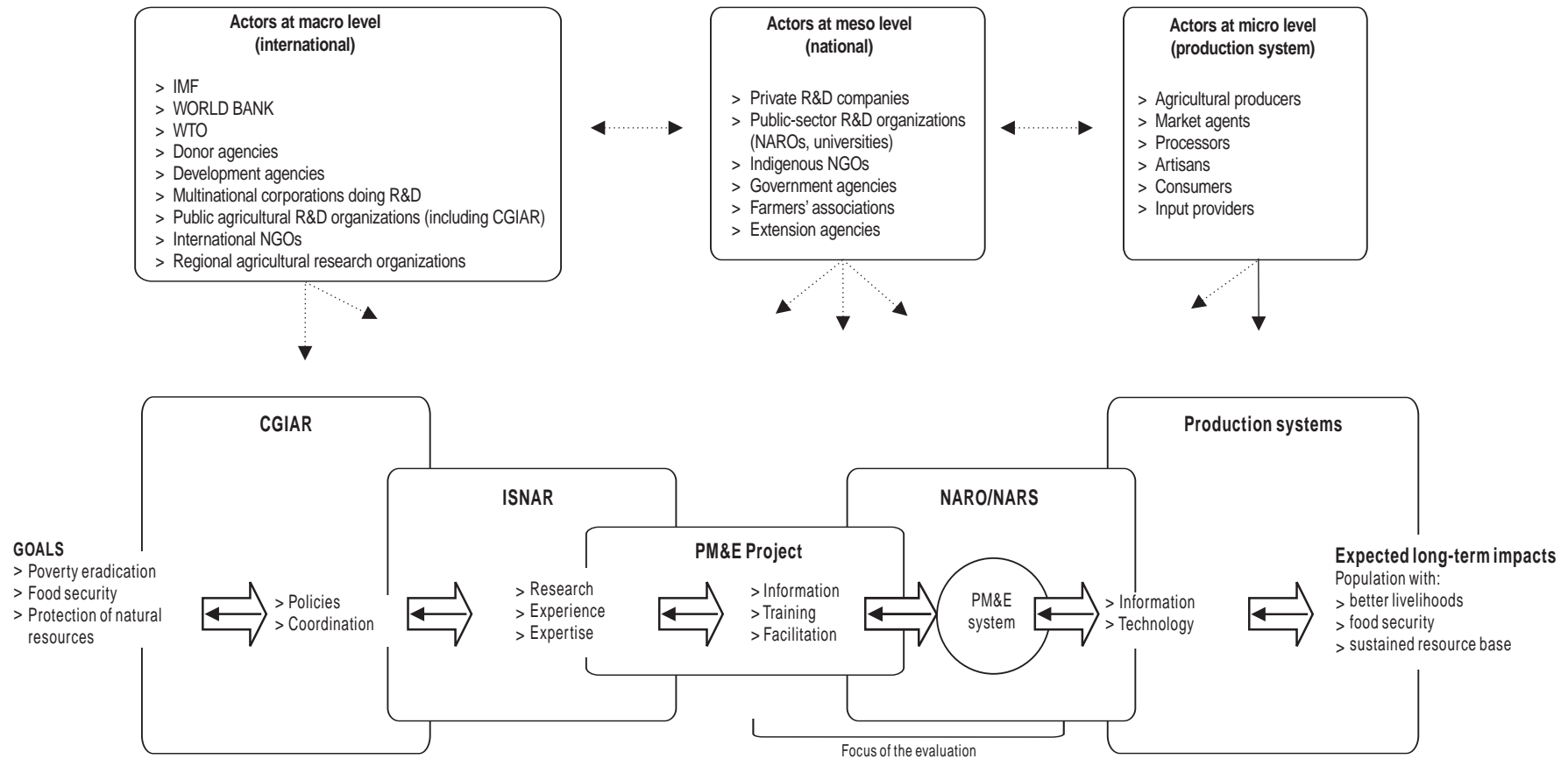
The evaluation of the PM&E project addressed the first two of these objectives. In so doing, it focused on the following questions:

1. What were the main contributions of the PM&E project to agricultural research management?
2. What lessons can be learned to improve the design of future capacity development programs?
3. What lessons can be learned to improve future evaluations of capacity development programs?

Rather than estimate the economic effects or impacts of new technologies on production, incomes, and related variables, the evaluation sought to identify the direct effects of a capacity development program on agricultural research management. While such direct effects are not the ultimate goal of capacity development, they are necessary for achieving higher-order goals. The present study focused on the development of capacity in PM&E, a crucial area of management that has been little explored to date.

Exhibit 1.1 illustrates the focus of the present evaluation in terms of a hypothesized “impact chain” which originates with the goals of the CGIAR and ends with expected long-term impacts on poverty, food security, and the environment. The chain includes links corresponding to the CGIAR system, ISNAR, the PM&E project, a national agricultural research organization, and an agricultural production system. As Biggs (1990), Dougherty (1996), Engel (1995), Röling and Wagenmakers (1998), and others point out, many different actors and factors affect agricultural innovation processes and the resulting social, economic, and environmental effects. With present evaluation methods

Exhibit 1.1 “Impact chain” from CGIAR development goals to expected long-term impacts, locating the focus of the evaluation



Note: The rectangles representing organizational units and systems overlap to reflect the co-production of key outputs. The project provides a crucial link between ISNAR and national agricultural research organizations and systems.

There is an urgent need to conduct more research on institutional development, particularly as it concerns agricultural research in developing countries (TAC Secretariat, 1997: ix).

and data sources, it is extremely difficult to identify and measure the impacts of a single project or program on broad socioeconomic variables at the level of the ultimate intended beneficiaries.²

Rather than address the entire impact chain, the present evaluation focused on the largely unexplored link between capacity development programs and the organizations they work to strengthen. The main purpose was to identify the types of direct impacts brought about, how they were brought about, and how such impacts might be enhanced in future capacity development efforts.

Structure of the report

This introductory chapter presented an overview of the context, objectives, and scope of this report. Chapter 2 introduces key concepts and terms, outlines the conceptual frameworks that guided the evaluation, and describes the methods used to collect, analyze, synthesize, and interpret the evaluation data. It then describes the five evaluation studies carried out. Chapter 3 is based on the first evaluation study and describes the object of the evaluation: ISNAR's PM&E project. It outlines the main project activities and characterizes each component in terms of the number of clients it reached and the intensity of interactions with each client. Chapter 4 is based on the other four evaluation studies. It identifies the primary impacts of the project at the level of participating individuals and organizations. Chapter 5 presents the main conclusions and lessons of the evaluations. This research report is based on 15 background studies. These are contained on a CD-ROM that is included with the report.

2. Anderson (1997), Anderson and Dalrymple (1999), Collinson and Tollens (1994), and Winkelmann (1998) catalogue the difficulties of documenting the social, economic, and environmental impacts of agricultural research.

2. Evaluation Concepts and Methods

This chapter outlines the conceptual frameworks on which the evaluation was based. It further describes the methods used to collect, analyze, synthesize, and interpret the results. The final section of the chapter introduces and defines the main concepts and terms used in the report.

Given the requirements of emerging development priorities, the methods, products, and processes of evaluation are in urgent need of examination (Picciotto, 1995:13).

Evaluation framework

An evaluation planning workshop was organized in February 1997 to focus the evaluation, develop an evaluation framework, and outline a set of procedures of data collection, analysis, and reporting.³ The resulting evaluation plan was reviewed by the PM&E project team and by members of an external advisory group.⁴ On the basis of the feedback received, the plan was finalized in May (Mackay and Horton, 1998). The evaluation framework guided collection and analysis of data through five independent but complementary studies. The framework was based on the project's "theory of action" and a framework for organizational assessment.

The theory of action

A theory of action is means-ends hierarchy that indicates the theoretical assumptions and models on which a project is based (Patton, 1997: 215–238). Originally, the PM&E project had no explicit theory of action. It was assumed that training and dissemination of information would enable individuals to improve their planning, monitoring, and evaluation activities and that this would lead to improved management of agricultural research organizations. The mechanisms by which these changes would be brought about, however, were not articulated in project documents.

In 1995, the PM&E project team prepared a logical framework for the project that grouped activities into three components:

- *Information.* Reference books and training materials on key aspects of PM&E would be produced and disseminated.
- *Training.* Training workshops would be organized to train trainers, to enhance knowledge and skills related to PM&E, and to motivate participants to improve PM&E in their organizations.

3. The evaluation planning workshop was held concurrent with a regional workshop that brought together key collaborators in the PM&E project to review progress in the project and plan its final year's activities. The concurrence of these two workshops allowed the evaluation planning team to interact with the PM&E project team and with key stakeholders in the region. Results of these workshops are reported in Andersen et al. (1998).

4. The evaluation team was supported by a four-member external advisory group composed of specialists in evaluation, organizational development, and agricultural research. The group's members provided critical comments on the evaluation design and draft reports of the various studies. While the main function of the group was to ensure high quality in the evaluation methods used, its members also provided useful suggestions for managing the evaluation and for presenting its results.

Donors sometimes measure the primary products of capacity building (trained scientists and reputable research institutions) as though they were products like improved strains of corn.... Research capacity is, however, a particular kind of development product with a special set of qualities that make it difficult to monitor, evaluate and sustain.... (Trostile, 1992: 1322)

- *Facilitation of change processes.* Technical assistance and support would be provided to a few organizations committed to improving their PM&E systems.

Chapter 3 provides more information on the project's theory of action.

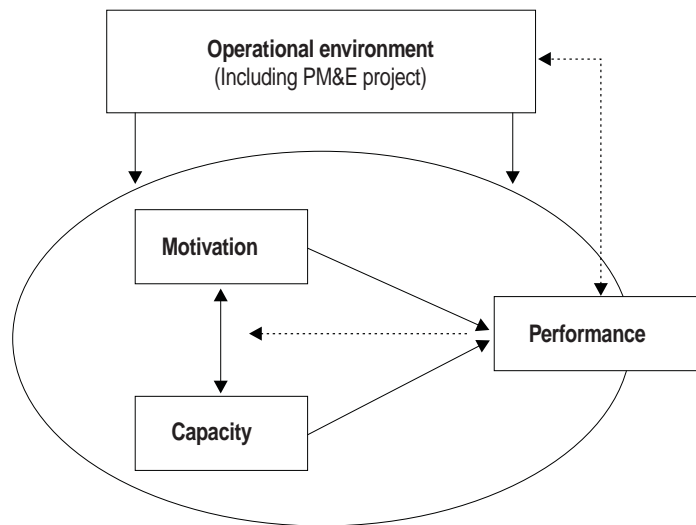
Organizational assessment framework

Frameworks for diagnosing or assessing organizations generally present a model of the organization – for example, the organization as an open system or as a political arena – and checklists to guide the collection and analysis of information related to key variables in the model. The present evaluation used a framework developed by Universalialia and IDRC (Lusthaus, Anderson, and Murphy, 1995). This framework was selected because of its comprehensiveness, flexibility, and relative simplicity.

The Universalialia-IDRC framework views an organization's performance as a function of its operational environment, motivation, and capacity. Operational environment refers to the legal, social, and economic context in which the organization operates. Organizational motivation refers to internal factors that influence the direction the organization is headed and the energy displayed in its activities. These, in turn, are influenced by such variables as organizational culture and incentives. Organizational capacity refers to the staff complement and resources possessed by the organization, as well as its structure, management systems, and linkages with other organizations. Organizational performance is gauged in terms of the organization's effectiveness, efficiency, and sustainability. Effectiveness refers to the degree to which the organization achieves its goals; efficiency refers to the degree to which costs are minimized and sustainability achieved in maintaining continuing relevance and effective acquisition of financial and other resources.

Since the PM&E project sought to bring about changes by working with and through agricultural research managers, the evaluation team modified the Universalialia-IDRC framework and applied it at two levels: at the individual level of a participant in the project and at the level of the organization as a whole.

In terms of this expanded framework, a capacity development program can be viewed as one element in the operating environment of an individual or organization. It can have direct effects, or impacts, on other factors in the environment and on the individual's or the organization's motivation and capacity. A capacity development program can also indirectly contribute to individual or organizational performance through its direct effects on the environment or on motivation or capacity. The relationship among the four dimensions and the critical factors associated with each are presented in Exhibit 2.1.

Exhibit 2.1 Organizational assessment framework

Operational environment. The external environment in which the organization carries out its activities.

Examples:

- Administrative and legal systems in which the organization operates
- Political environment
- Technological options
- Social and cultural environment
- Economic trends
- Stakeholders

Motivation. Refers to internal factors in the organization that influence the direction of the organization's activities and the level of energy it displays in its activities. Examples:

- The organizational culture
- Incentive and reward systems
- The institutional "climate" in general
- The history and traditions of the organization
- Leadership and management style
- A generally recognized and accepted mission statement
- Performance-related incentive plans
- Shared norms and values promoting teamwork towards organizational goals

Capacity. The resources, knowledge, and skills of the organization. Examples:

- Strategic leadership
- Organizational structure
- Human resources
- Financial resources
- Physical infrastructure
- Program process management
- Inter-institutional linkages

Performance. The achievements of the organization in relation to its objectives. Four key indicators of organizational performance are as follows:

- Effectiveness – The degree to which the organization achieves its objectives
- Efficiency – The degree to which it generates its products using a minimum of inputs
- Relevance – The degree to which the organizational objectives and activities reflect the necessities and priorities of key stakeholders
- Financial sustainability – Conditions that make an organization financially viable include multiple sources of funding, positive cash flow, and financial surplus

Note: The specific indicator of motivation, capacity, environment, and performance used in evaluation study 3 are presented in Annex 4 (individual level) and Annex 5 (organizational level).

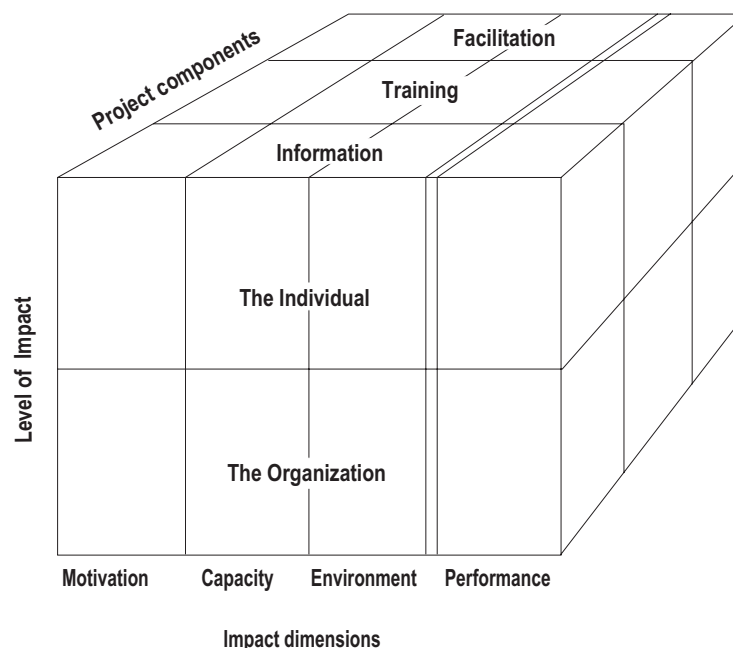
Source: Adapted from Lusthaus, Anderson, and Murphy, 1995; and Lusthaus et al., 1999.

Integrated evaluation framework

Based on the PM&E project's theory of action and the assessment framework, an integrated evaluation framework was developed that relates the project components to four potential areas of impact at the level of individuals and organizations (Exhibit 2.2). Evaluation studies were then designed to assess the impacts of the project components on the environment, motivation, capacity, and performance of participating individuals and organizations.

With the advent of a more demanding, fragmented, and participatory approach to development, evaluation has become much more difficult to design. It encompasses more intricate methodological demands and sets very different standards for establishing impacts (Rist, 1995: 168–169).

Exhibit 2.2 Integrated evaluation framework



Note: The three project components are assumed to contribute mainly to aspects of individual and organizational motivation, capacity, and the environment. The double line between environment and performance reflects the fact that performance is a function of motivation, capacity, and environmental variables. Hence, the projects' contributions to performance are indirect.

Data collection and analysis

This evaluation, as most organizational studies, relies heavily on perceptual data obtained from members of the organizations under study. In this case, they may be considered clients or beneficiaries of the ISNAR project. In order to cross-check and validate findings, several researchers were involved and different types and sources of data and analytical procedures were used. Where possible, findings based on the perceptions of a specific group (for example, participants in training events) were “triangulated” with the perceptions of other groups (for example, peers and supervisors), and with documentary evidence and direct observations.⁵

Five evaluation studies were done to gather information on the PM&E project and its results (Exhibit 2.3). The first study reviewed the context of the project and outlined its objectives, strategies, activities, and outputs. The second and third studies examined the impacts of the project’s information and training activities. The fourth study documented the process of organizational change in three pilot cases and examined the project’s contributions to change. The fifth study analyzed changes in PM&E since 1992 in nine agricultural research organizations throughout the region. The fourth and fifth studies explored the

5. There are a number of sources on the use of triangulation and multiple methods, for example, Bickman and Rog (1997), Cassell and Symon (1994), Creswell (1998), Greene and Caracelli (1997), Lee (1999), and Miles and Huberman (1994).

Exhibit 2.3 The five evaluation studies

Study	Objectives	Methods	Source of data
Study 1. Introduction to the PM&E project	Review the project's objectives, strategies, activities, and outputs	Self-assessment	Project records
Study 2. Impacts of information	Analyze dissemination, use, and impact of publications	Mail survey	144 recipients of project publications from 40 organizations in 24 countries
Study 3. Impacts of training	Analyze impacts of training	Mail survey	144 training participants from 43 organizations in 24 countries
Study 4. Changes in PM&E in the pilot cases	Analyze changes in PM&E in the pilot cases; identify contributions of the PM&E project; determine effects of the changes on organizational performance	Self-assessment	Collaborators in three pilot cases
Study 5. Dynamics of PM&E in Latin America and the Caribbean	Analyze changes in PM&E in the region; identify contributions of the PM&E project; determine effects of the changes on organizational performance	Case studies	Informants, documents, and observations in nine organizations in eight countries

links between changes in PM&E and organizational performance. Together, these studies produced a wealth of detailed quantitative and qualitative information on the project and its impacts, described in the five evaluation study reports, nine case studies, three self-assessments, and various electronic databases. Publication details for these reports are in Annex 1 at the end of the report. The five evaluation studies are described briefly here.

Study 1. The ISNAR project. This study, authored by the PM&E project team (Cheaz et al., 1999), provided a descriptive review of the project. It presented background information on the institutional setting and outlined the project's objectives, strategies, activities, and products. Sources and uses of project resources were also documented.

Study 2. Impacts of information. Relatively few evaluations have been done on the impact of information on organizational capacity and performance (CTA, 1998). This study, carried out by two consultants (Siri and Borges-Andrade, 1999), evaluated the distribution of project publications, their use by recipients, and their effects on individuals and their organizations. A postal survey was employed to collect information from individuals who were known to have received project publications prior to July 1997. Respondents provided information on the use of the publications and their usefulness relative to other publications on similar topics. Respondents also scored the impact of the publications according to a set of indicators designed to determine the degree to which information had affected the motivation, capacity, operational environment, and performance of these professionals and their organizations. Respondents who reported impacts were asked to provide concrete examples. Qualitative responses were used to verify claims of impact and to generate examples of the effects of information.

The evaluation of information provision is a very difficult task. Traditional methods of identifying and assessing its benefits have largely been limited to process evaluation (CTA, 1998: 47).

Because users are at the receiving end, their assessments of the quality, efficiency, and adequacy of the public services and the problems they face in their transactions with public agencies can provide significant input for the improvement of service delivery and management of the agencies involved (Paul, 1995: 156).

Study 3. Impacts of training. There is an extensive literature on the evaluation of training.⁶ Perhaps the most widely used model for evaluating training is that of Kirkpatrick (1998), which allows for measurement of possible effects of training at four levels: (1) participants' reaction to the training, (2) participants' learning as a result of the training, (3) change in participants' behavior resulting from the training, and (4) the subsequent impact on an organization as a result of participants' behavior change (Falletta, 1998: 259). Study 3 was concerned primarily with the latter two of Kirkpatrick's levels.

J. Borges-Andrade and C. Siri (1999) carried out the study to evaluate the impact of project training on participants' behavior and on their organizations. A questionnaire was mailed to all those in the region who had participated in project training prior to 1997. As in the information study, respondents scored the impact of training. A standard set of indicators was used to determine the degree to which the training had affected the motivation, capacity, operational environment, and performance of these professionals and their organizations. Respondents also provided examples of specific impacts. The questionnaire further solicited information on training done by the respondents using project materials, how the project could have been of more use to the respondents' organizations, and future impacts that might be expected. The survey methods employed were similar to those used in the information study. Yet one additional technique was used to corroborate the information provided: the respondent's immediate superior and a colleague were also asked to score the impacts of training on trainees and on the organization as a whole.

Study 4. Changes in PM&E in the pilot cases. The project's facilitation component was evaluated by means of self-assessment exercises in the pilot case organizations. The change teams in the three pilot cases organized and facilitated workshops during which management and staff at each organization analyzed the changes that had taken place in their organizations thus far. They also identified strengths and weaknesses of the change processes and evaluated the project's contributions to the changes that had occurred. The self-assessment procedures and instruments were developed by the evaluation team together with collaborators from the pilot case organizations. These collaborators within the organizations then organized the self-assessment and reported the results. Results of the three self-assessments were synthesized at a workshop in April 1999 in Maracay, Venezuela (Aued et al., 1999).

Study 5. Dynamics of PM&E in the region. This study documented changes in PM&E systems in the region's agricultural research organizations since 1992 to evaluate the contributions of the project to change in PM&E and to identify the influence of PM&E on organizational performance. Nine case studies were done and results were contrasted with 13 case studies that were carried out in

6. See, for example, Basarab and Root (1992), Easterby-Smith (1994), Rae (1997), and Taschereau (1998). For a broad coverage of methods for evaluating social programs in developing countries, see Valadez and Banberger (1994).

1992 (Novoa and Horton, 1994).⁷ Based on Yin (1994), a standard case study instrument was developed, which specified the procedures to be used in data collection and fieldwork. Perceptual data were collected through interviews with each organization's managers and staff and with key external informants. Documentation on PM&E was also reviewed, for example, strategic and operational plans, program documents, forms for project preparation and reporting, progress reports, and evaluation reports. PM&E facilities and practices were observed to the extent possible during country visits, which lasted from five to ten days. Data collection was done jointly by one or more of the evaluation team members and one or more members of the organization under study. The case study investigators prepared separate reports for each case study (Annex 1). Later, synthesis reports were prepared in English and Spanish (Horton and Novoa, 1999; Novoa and Horton, 1999).

When the training institution's goals include organizational learning and capacity building, evaluators should make every effort to consult the key stakeholders about impact indicators (Taschereau, 1998: 14).

Complementary studies. Apart from the five main studies, complementary work was undertaken to gather information from other sources on impacts of the project. Agricultural research leaders were surveyed to obtain their views on project impacts. A simple questionnaire was mailed to top-level agricultural research managers and to representatives of regional organizations who were thought to be familiar with the ISNAR project. They were asked to indicate what types of project impacts they had observed. The responses received from 51 individuals were coded and analyzed (Dupleich and Horton, 1999).

Impacts reported by workshop participants and by others familiar with the project were also followed up through telephone conversations, field visits, and correspondence in order to obtain detailed information and check the validity of claims.

Synthesis of findings and quality assurance

Key stakeholders were involved at each stage of the evaluation process in order to promote a dialogue on evaluation issues, to share progress and results, and to obtain guidance, insights, and suggestions.

Various techniques were used to organize, synthesize, and condense the information available to permit its comprehensive analysis, interpretation, and reporting. The questionnaires generated quantitative information that was analyzed and synthesized employing statistical methods and graphs. All responses to open-ended questions were processed electronically using the software NUD.IST.⁸ Coding and sorting allowed the responses to be printed out in numerous ways and analyzed and interpreted from different angles. These lists were reviewed in order to identify patterns of responses and to decide on subsequent coding and sorting. After sorting and grouping, the number of

7. The following organizations were included in the 1997 studies: INIA (Chile), INIFAP (Mexico), ICTA (Guatemala), CONITTA (Costa Rica), CARDI (Caribbean region), CENICAFE (Colombia), CORPOICA (Colombia), CIAT (Bolivia), and INIA (Uruguay). Seven of these organizations were also studied in 1992 to provide baseline information for the PM&E project. Studies of two organizations could not be repeated due to political decisions in these: EMBRAPA (Brazil) and INTA (Argentina).

8. NUD.IST, which stands for Non-numerical Unstructured Data Indexing, Searching and Theory-building, is a computer-based utility for development, support, and management of qualitative data analysis.

responses in each group was calculated and summary tables were produced. Representative quotes were selected from these lists for inclusion in the present report.

Several workshops were organized to review the methods employed and the results obtained. These events permitted the evaluation team to discuss evaluation concepts and methods as well as the results with professionals from the region and with evaluation specialists. Progress reports on the evaluation were presented in the project's final workshop in Quito in December 1997 (Andersen et al., 1998) and in an evaluation review and synthesis workshop in Washington, D.C., in August 1998 (Horton, Dupleich, and Andersen, 1998). Results of the pilot cases' self-assessment exercises were synthesized at a workshop in Maracay, Venezuela in April 1999 (Aued et al., 1999). A preliminary version of this report was reviewed at a regional workshop in Panama in May 1999 (Andersen et al., 1999). The evaluation findings reported in the following chapters reflect the comments and suggestions received at all these events.

The evaluation team had the support of a four-member external advisory group made up of specialists in evaluation, organizational development, and agricultural research. Members of the group received the original evaluation design document and draft reports of the various studies for critical comments. The main function of this group was to ensure high quality in methodological aspects of the evaluation. Members also provided suggestions for directing the evaluation and presenting its results. The advisory group was made up of Oswaldo Feinstein, senior evaluator at IFAD (until 1998) and the World Bank (since 1998); Josette Murphy, senior evaluator at the World Bank (until 1998); Jean Quesnel, head of evaluation at IDB (until 1998); and Terry Smutylo, head of evaluation at IDRC. Members of the external advisory group participated in the review and synthesis workshop in August 1998.

Concepts and terms used in the evaluation

The present study draws on concepts from several fields of research and practice including evaluation, management, development administration, and organizational studies. Many of the terms used in the study therefore have multiple meanings – some of which are hotly contested. This section introduces and defines key terms as they are used in the report. In some cases references and additional sources of information are provided.

Capacity

The term capacity is defined as the ability of individuals and organizations to perform functions effectively, efficiently, and in a sustainable manner (UNDP, 1998: 5). It includes all those attributes, capabilities, and resources of an organization that enable it to undertake its mission. An organization's capacities can be grouped into four categories: human, financial, physical, and organizational (Barney and Hesterly, 1996: 133).

Capacity building and capacity development

Capacity building and capacity development are often used as synonyms. In this report, the term capacity development is employed to reflect the develop-

mental nature of strengthening agricultural research management. Morgan (1997: iii) defines capacity development as the process by which individuals, groups, organizations, and institutions strengthen their ability to carry out their functions and achieve desired results over time. Capacity development in agricultural research can be seen as the process of improving the ability of agricultural research organizations and systems to perform their assigned tasks in an effective, efficient, and sustainable manner. Such capacity development involves strengthening the capabilities of individuals, and organizations and linkages among them.

There is probably no other area of development policy where so much money is spent in pursuit of an objective whose very name, as well as content, is subject to such basic and continuing dispute [referring to institution building] (Moore, Stewart and Hudock, 1995: 9).

Case study in organizational research

Hartley (1994: 208) defines case study research as detailed investigation of one or more organizations, or groups within organizations, with a view to analyzing the context and processes involved in the phenomenon under study. The phenomenon is not isolated from its context (as in laboratory research) but is examined in relation to its context.

Contribution

To contribute (to a result) is to be partly responsible for it, to share in bringing it about. In this report, the term contribution refers to the role(s) a program has played in bringing about capacity development in agricultural research management. Mayne (1999) outlines a set of procedures for analysis of contributions that is similar to the approach employed in the present evaluation.

Development intervention

A development intervention is a planned and coordinated set of activities (e.g., a project or program) that aims to achieve specific development goals at the level of individuals, organizations, or institutions.

Effectiveness

Effectiveness refers to the extent to which desired objectives have been achieved (DANIDA, 1993: 1).

Efficiency

Efficiency is the extent to which results have been achieved with a minimum use of resources (DANIDA, 1993: 1).

Facilitation of organizational change

External or internal agents are said to facilitate organizational change when they provide assistance and support to an organizational change process. Such facilitation may involve stimulating, motivating, guiding, or providing technical or political support (see “organizational change process”) (Díaz et al., 1997).

Impact and impact assessment

An impact refers to an effect. In this report, impact refers to any effect, whether anticipated or unanticipated, positive or negative, brought about by a development intervention at the level of the individual or the organization. Such effects generally involve changes in both cognition and behavior. Mohr (1992) defines impact assessment as the process of determining the extent to which one set of directed human activities (i.e., an intervention) affected the state of some object or phenomena and (sometimes) determining why the

effects were as small or large as they turned out to be. Rist (1995: 169–170) views impact assessment as a means of “finding out what has happened to real people in real places, how development efforts have affected these people, what efforts yield sustainable benefits, and whether and how local ownership of the project or program has taken hold.” These definitions differ from those used in some evaluations, where impact refers to intended benefits or to highly aggregated long-term social, economic, or environmental effects of interventions (DANIDA, 1994).

Institution and organization

Institution refers to a socially sanctioned and maintained set of established practices, norms, behaviors, or relationships (e.g., trade regulations, land tenure systems, and family) that persist over time in support of collectively valued purposes. Organizations are formal structures with designated roles and purposes (Morgan and Qualman, 1996: 1). According to Burki and Perry (1998: 11),

institutions are formal and informal rules and their enforcement mechanisms that shape the behavior of individuals and organizations in society. By contrast, organizations are entities composed of people who act collectively in pursuit of shared objectives. These organizations and individuals pursue their interests within an institutional structure defined by formal rules (constitutions, laws, regulations, contracts) and informal rules (ethics, trust, religious precepts, and other implicit codes of conduct). Organizations, in turn, have internal rules (i.e. institutions) to deal with personnel, budgets, procurement, and reporting procedures, which constrain the behavior of their members.

Uphoff (1986) distinguishes between organizations that are not institutions (e.g., a recently established agricultural consultancy firm), institutions that are not organizations (e.g., marriage), and organizations that are also institutions (e.g., a country’s central bank or its national agricultural research institute).

Institutionalization

Congruent with the discussion of institutions and organizations, when the rules and norms for a new organizational system (e.g., a PM&E system) have been established (e.g., manuals have been prepared) and professionals have been trained in their use, the system can be said to be “organized.” But only when users accept and value the new system and use it routinely, that is, when it becomes part of standard operating procedures and organizational culture, can it be said to be “institutionalized.”

Integrated PM&E system

An integrated PM&E system is an organizational system by which planning, monitoring, and evaluation are done in an integrated, coherent manner in support of management decision making, accountability, and organizational learning. In an integrated system, planning, monitoring, and evaluation are done at all decision-making levels (e.g., at the project, program, and organizational levels) in a coherent fashion (Gálvez et al., 1995). Horton, Peterson, and Ballantyne (1993) define the three main functions of such a system:

- *Planning*. A process for setting organizational goals and defining the resources needed to achieve the goals. Planning is also a way to build consensus around the mandate, direction, and priorities of a research program or organization.
- *Monitoring*. Observing or checking on research activities and their context, results, and impacts. Monitoring is carried out for three reasons: to ensure that activities are proceeding according to plan; to provide a record of input use, activities, and results; and to warn of deviations from initial goals and expected outcomes.
- *Evaluation*. Judging, appraising, or determining the worth, value, or quality of research in terms of its relevance, effectiveness, efficiency, and impact.

Intensity of interaction

The frequency, duration, and quality of interaction between a development program and its clients or beneficiaries is the intensity of interaction (based on Montague, 1997: 6). See also “reach.”

Logical framework

The logical framework is commonly used by the international development community as a means of portraying the theory of action of a project or program. A “logframe” is generally displayed in a four-by-four matrix that makes explicit the hypothesized logical linkages between a program’s inputs (or activities), its outputs, and two levels of expected impacts (purpose and goal). A logical framework also presents indicators and means of verification to facilitate the monitoring of programs and the evaluation of results (Coleman, 1987; Gasper, 1997; Uribe and Horton, 1993a).

Management

Management has been defined as the judicious use of means to achieve an end, or as “getting the work done by the best means available” (Thomas, 1996: 100). A classical view emphasizes the management functions of planning, organizing, commanding, coordinating, and controlling. More recently, the enabling role of managers has been emphasized “to create the conditions under which the work will be done, and done well” (Paton, 1991: 35). In the context of agricultural research, management involves defining research goals, strategies, and priorities; formulating research programs; determining responsibilities; allocating resources; leading, motivating, and supervising staff; and maintaining relations with stakeholders (adapted from FAO, 1997).

Organizational assessment framework

An organizational assessment framework is a theoretical construct that aids in the diagnosis of an organization’s current state, to measure changes over time, or to find ways to solve specific problems (Harrison, 1994). The evaluation study reported on here employs a framework developed by Universalis and IDRC (Lusthaus, Anderson, and Murphy, 1995) with four analytical dimensions:

- *Organizational motivation.* The internal factors that influence the direction of an organization's activities and the level of energy manifested in these. Important motivational factors include the organization's history and traditions, its mission statement, organizational culture and "climate," shared norms and values, and incentive systems (Ford, 1992).
- *Organizational capacity.* The staff complement and resources possessed by the organization as well as its structure, management systems, and linkages with other organizations.
- *Operational environment.* The context or environment in which the organization operates, including the economic, technical, socio-cultural, institutional, legal, and political factors that influence its behavior and performance (Scott, 1992).
- *Organizational performance.* The execution of activities to achieve objectives. Typical criteria for evaluating organizational performance are effectiveness, efficiency, relevance, and sustainability.

Organization

See "institution and organization" above.

Organizational change

Organizational change refers to any alteration or variation in the character or performance of an organization. Such changes lie along a continuum from incremental change to fundamental or large-scale change. While incremental change is less complex than fundamental change, both involve three basic stages: unfreezing, moving, and freezing (Armenakis and Field, 1993). Fundamental or large-scale change is defined as lasting change in the character of an organization that significantly alters its performance (Ledford et al., 1989). Organizational character refers to the design of the organization (strategies, structures, technology configurations, formal information and decision-making systems, and human resource systems) and to organizational processes (organizational behavior, communications, decision making, participation, cooperation, conflict, politics, and the flow of information and materials). Performance refers to the execution of activities in relation to objectives.

Organizational learning

Brown (1998: 62) defines organizational learning as "an organization's capacity for accumulating knowledge from its own experiences, disseminating that knowledge to members throughout the organization (and not to a single individual or group within it), reflecting on it, and using it as a basis on which to build planning and programming activities, to adapt and to cope with change." He goes on to note that

learning is far more than the collection and collation of data and the preparation of reports. It is a process of collective (and collaborative) cogitation and reflection on experience, and requires the inculcation of positive attitudes to learning and the development of analytical and cognitive capabilities at the institutional level. One might think in terms of a *predisposition or propensity to learn* (1998, emphasis original).

Dale (1994: 22) defines a learning organization as one that facilitates the learning of all its members and continuously transforms itself.

Output

Outputs are the direct results of an intervention, a “deliverable” for which management is responsible (see also “results” and “impact and impact assessment”).

Program

See “project and program.”

Program evaluation

A program evaluation is the systematic collection of information about the activities, characteristics, and outcomes of a program to make a judgment about the program, to improve program effectiveness, or to inform decisions about future programming (Patton, 1997: 23).

Project and program

A project can be defined as a planned, non-routine intervention for achieving one or more objectives, encompassing a set of interrelated activities that are undertaken during a specified period of time using limited human, financial, and physical resources. A program is a less clearly bound entity. It is most easily defined in relation to a project, as a less specified and often more comprehensive, long-term or diverse intervention (Dale, 1998: 20).

Reach

Reach refers to the breadth of influence over which an intervention or organization spreads its resources, including the number and types of groups affected (Montague, 1997: 6). See also “intensity of interaction.”

Relevance

Relevance means importance and practical utility. In organizational assessment, it refers to the degree of congruence between (a) the objectives and activities of an organization and (b) the needs and expectations of key stakeholders.

Results

Results encompass both the outputs and impacts of an activity (Mayne, 1999).

Strategic management

The strategy concept has been defined as a pattern of objectives, purposes, or goals and major policies and plans for achieving them stated in such a way as to define what business the company is in or is to be in and the kind of company it is or is to be. Strategic management is defined as the set of decisions and actions which lead to the development of an effective strategy or strategies to help achieve corporate objectives. Strategic decisions are thus those decisions concerned with the entire environment in which the firm operates, the whole of resources and people who constitute the company, and the interface between the two (Luffman et al., 1996: 6).

Strategic planning

Strategic planning is the process by which an organization builds a vision of its future and develops the necessary structure, resources, products, procedures,

and operations to achieve it. It is based on the concept of strategy: a course of action chosen from a number of possibilities to reach a long-term vision or goal (Collion, 1993: 173).

Theory of action

A theory of action is a means-ends hierarchy that specifies the theoretical assumptions and models on which a program or project is based. It makes explicit the means by which desired results are to be produced. The espoused theory contained in a program's official proposals or other documents often differs from the actual "theories-in-use," that is, the bases on which people actually act (Patton, 1977: 215–238).

Triangulation

The use of more than one data source, method, data type, researcher, or theory to arrive at and confirm findings is called triangulation. It is a research strategy to support a finding "by showing that independent measures of it agree with it or, at least, do not contradict it" (Miles and Huberman, 1994: 266–267). Examples of triangulation used in organizational research are in Cassell and Symon (1994).

3. The PM&E Project: Design, Activities, and Outputs

This chapter is based on the descriptive review of the project provided by the first evaluation study. It describes the state of PM&E in the region in the early 1990s; outlines the PM&E project's objectives, philosophy, and design; and details the project's activities and outputs. Reach and intensity of interaction with clients are assessed for each of the main project components.

From 1992 to 1997, ISNAR implemented the project "Strengthening the planning, monitoring, and evaluation of agricultural research in Latin America and the Caribbean" in collaboration with several national and regional organizations. Agricultural research organizations were facing numerous challenges in the period when the project was carried out. Their managers faced declining budgets on one hand and proliferating demands for research outputs and services on the other. They were searching for means to cope with increasing uncertainty, while meeting rising demands for accountability and performance. Many saw improvements in PM&E as a means to achieve these ends.

Research PM&E in the region

When the project began in 1992, a set of diagnostic case studies was done to assess the state of PM&E in the region and to identify priorities for improvement (Novoa and Horton, 1994).⁹ These studies showed that all agricultural research organizations in the region engaged to some extent in PM&E activities. In practice, the scope and quality of activities varied widely among organizations. As a rule, PM&E was driven by external demands. This was especially true in organizations that relied heavily on loans or grants from international development agencies.

Of the three functions, planning was the most highly developed and thoroughly institutionalized. Most organizations prepared medium- or long-term institutional plans and annual operating plans. Various types of monitoring were also done, including field visits, project reviews, and periodic progress reporting. However, research monitoring was seldom systematic or well documented. Evaluation was the weakest phase in the management cycle. Very few organizations systematically evaluated their research programs or assessed their impacts.

Planning, moreover, tended to be poorly integrated with monitoring and evaluation. Despite assertions that planning should form the basis for monitoring

Keeping performance going involves not simply efficient and effective production today, but building up and maintaining the capacity to produce tomorrow and on into the future. Two capacities are critical: the ability to do and the ability to adapt (Brinkerhoff, 1991: 193).

9. Eleven studies were done in Latin America and the Caribbean, at INIFAP (Mexico), CARDI (the Caribbean), SIRI (Jamaica), ICTA (Guatemala), CONITTA (Costa Rica), CENICAFE (Colombia), ICA (Colombia), CIAT (Bolivia), INIA (Chile), EMBRAPA (Brazil), and INTA (Argentina). Two additional studies were carried out in industrialized countries to provide benchmark information on PM&E in advanced agricultural research systems. The cases studied were the Research Branch of Agriculture in Canada and the Agricultural Research Center of Washington State University in the USA.

Projects need to focus on creating and transmitting knowledge and capacity. The key role of development projects should be to support institutional and policy changes that improve public sector delivery (World Bank, 1998: 5).

and evaluation, plans seldom provided reference points to guide their implementation or subsequent monitoring or evaluation. Monitoring and evaluation were generally seen as means to gather evidence for justifying continued funding, rather than for improving research performance. Researchers and managers were not yet convinced of the potential value of an integrated PM&E system.

Project background and objectives

The PM&E project originated at a 1990 meeting convened by IDB and the Inter-American Institute for Cooperation on Agriculture (IICA) to identify priorities for CGIAR centers in Latin America. At this meeting, national research leaders asked ISNAR to provide management training with particular emphasis on research program planning and management.

That year ISNAR submitted a project proposal to IDB. The original proposal outlined an action research sequence including a needs assessment, testing of management innovations, evaluation of experiences and refinements of innovations, and dissemination of lessons. The entire sequence was to be implemented in six years. The proposal requested initial support of US \$1.6 million for the first three activities, which were to be implemented over three years.

IDB responded that it was interested in supporting the proposal, but could provide only \$700,000 over a period of 18 months. As a result, the action research aspects of the project were scaled back and activities were focused on training. In the final project document, approved in late 1991, the general objective of strengthening PM&E in the region's agricultural research organizations was to be achieved through four activities: identifying specific needs for improving PM&E, preparing and disseminating practical guidelines for PM&E, informing research leaders about ways to improve PM&E through regional workshops, and training middle-level managers in practical aspects of PM&E.

In the approved project, four diagnostic case studies on PM&E were to be done, one in each sub-region,¹⁰ each to be prepared by consultants from the region. Later, ISNAR staff were to prepare the guidelines on PM&E and organize regional workshops and training events.

The project was implemented in two phases: phase 1 from 1992 to 1994 and phase 2 from 1995 to 1997. In addition to the original financial support provided by IDB, substantial additional support was later acquired from several other international agencies and national and regional organizations.

Project philosophy

The project's strategies and activities were guided by three values outlined in the original proposal. These relate to participation, learning by doing, and diversity. Participation of organizations and managers was seen as essential for developing appropriate activities and outputs to strengthen local capacity and

10. The sub-regions were (1) Mexico, Central America, and Panama; (2) the Caribbean; (3) the Andes; and (4) the southern cone of South America.

build a sense of ownership and common commitment to achieving the desired results. Further, the project viewed organizational strengthening as a process of learning by doing in which ISNAR staff together with participating organizations jointly assessed needs, planned activities, tested innovations, and learned from the results. Instead of introducing generic, disciplinary-based management tools, the project sought to capitalize on the diversity of knowledge and experience in the region and elsewhere, in order to develop a regional capacity to identify and resolve problems.

The manner in which the project was planned and implemented and the way it evaluated its activities reflected these core values. One of the first project activities was a participatory planning workshop in June 1992. Managers from 15 agricultural research organizations in the region met to pool information on PM&E and to review the project's initial work plan. Drawing on their personal knowledge and experience and on previous studies (Novoa, 1989), participants proposed several changes in the work plan. For example, they decided to increase the number of case studies and to involve research managers in the implementation of all aspects of the project, not just in the case studies.

The active participation of agricultural research managers in the planning workshop established a precedent for their continued involvement in later activities, which included the planning and execution of case studies, preparation of training materials, delivery of training events and workshops, and evaluation of project results. In this way, professionals in the region influenced the design and execution of the project. While the objectives remained constant over time, the activities employed to achieve them were frequently reviewed and revised to match emerging needs and opportunities.¹¹

Gibbons and colleagues (1994) drew attention to the ascent of what they refer to as a "new mode of knowledge production." The new mode differs fundamentally from the dominant mode of knowledge production, which has as its ideal Newtonian empirical and mathematical physics (Gibbons et al., 1994: 2). Some attributes of the new mode of knowledge production follow:

- Knowledge is produced in the context of application rather than in the context of a university or a particular discipline.
- Knowledge production is a transdisciplinary process. It involves integrating diverse skills in an evolving framework of action rather than taking place within the confines of a single discipline.
- Knowledge production is heterogeneous in terms of the skills and experience that people bring to it. Organizational configurations and the composition of problem-solving teams change over time as requirements evolve.
- Social accountability permeates the knowledge production process.
- Quality control processes are more complex and broadly based than in disciplinary science, where peer review and professional control prevail. In the new mode of knowledge production, participating social actors may apply diverse social, economic, political, and ethical criteria to gauge the quality and value of knowledge.

Developmentally-oriented programs have as their purpose the sometimes vague, general notion of ongoing development. The process is the outcome. They eschew clear, specific, and measurable goals up-front because clarity, specificity, and measurability are limiting. (Patton, 1999: 109).

11. The participatory nature of the project is described in some detail in Horton (1999).

The concept of 'knowledge transfer' is theoretically inadequate and practically dangerous to describe and/or study the exchanges involved in agricultural innovation. 'Networking', as a dynamic action-oriented concept focusing on engagement, relationship management and social interaction is a contender for replacing it (Engel, 1995: 1).

The PM&E project's philosophy and mode of operation are consistent with this new mode of knowledge production as described by Gibbons and colleagues.

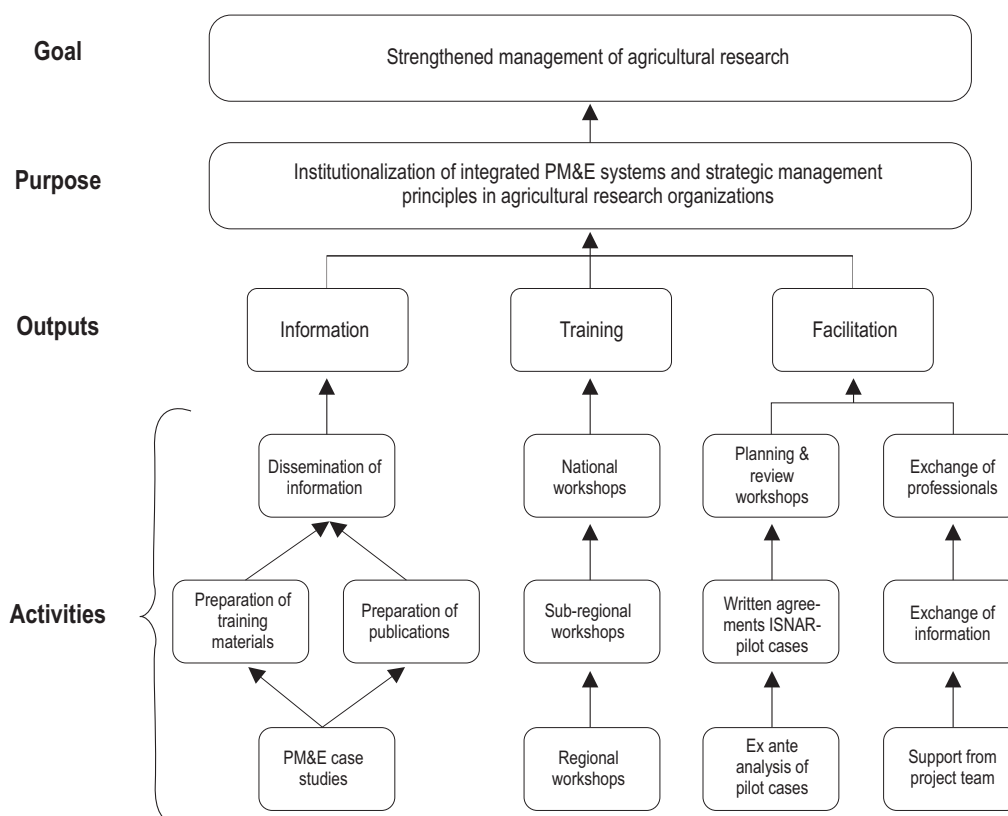
Project design and theory of action

A theory of action is a means-ends hierarchy and set of assumptions that underpins an intervention and indicates how desired results are to be achieved. The PM&E project did not have an explicit theory of action until the beginning of its second phase in 1995, when a participatory planning workshop was held at which a logical framework was developed for the project. The logframe described the logical links between the project's activities, its outputs, its purpose, and ultimate goal (Exhibit 3.1).¹²

In order to strengthen agricultural research management, the project employed three types of activities (referred to as "project components"):

- *Information.* Reference books and training materials on key aspects of PM&E were produced and disseminated.

Exhibit 3.1 Hierarchy of project objectives



Source: Adapted from Cheaz, Horton, and De Souza Silva, 1996: 17.

12. Terminology employed in logical framework analysis is presented in Coleman (1987), Gasper (1997), Sartorius (1996), TAC (1999), and Uribe and Horton (1993a).

- *Training.* Training workshops were organized to train trainers, to enhance knowledge and skills related to PM&E, and to motivate participants to improve PM&E in their organizations.
- *Facilitation of change processes.* Technical assistance and support were provided to a few organizations committed to improving their PM&E systems.

These three categories of activities were expected to produce a core group of managers who were skilled in PM&E and motivated to improve management in their organizations.¹³ Twenty-five individuals were to be trained in regional workshops, 80 in sub-regional workshops, and 800 in national workshops. A set of training materials and guidelines for implementing PM&E were to be produced that would provide a coherent framework for PM&E in the context of strategic management and useful tools for carrying out PM&E. Strategies for institutionalizing PM&E were also to be made available to agricultural research organizations.

These three project components were expected to lead to the establishment of integrated PM&E systems in participating agricultural research organizations. Upon project completion, integrated PM&E systems were envisioned to be operating in at least four organizations. Indicators for this result included the effective linking of PM&E activities, use of standardized PM&E instruments and procedures, provision of appropriate personnel and resources for PM&E, and use of information generated by PM&E in decision making.

The link between project activities and the establishment of integrated PM&E systems in national organizations was based on the assumption that strengthening PM&E would continue to be a priority in the region. Moreover, it assumed that project outputs would be adequately disseminated, that the project's strategies and methods would be applied by participating organizations, and that trained personnel would be retained by their organizations.

The implementation of integrated PM&E systems was expected to strengthen the management of agricultural research. The three main indicators of strengthened management were the presence of strategic plans, enhanced institutional credibility, and enhanced managerial capacity. This result depended on the information generated by the PM&E system being used by managers for improved decision making. It also required that the PM&E systems be well integrated with other management systems and that parallel efforts be undertaken to strengthen other aspects of management.

The project's logical framework did not deal with higher-order objectives. It assumed that improved management would contribute to the generation of improved information and technology. These research outputs were expected to lead to improvements in agricultural production systems. The project's underlying belief was that these improvements would contribute to the achievement of broad socio-economic goals such as food security, natural resource conservation, and reduction of poverty.

13. Cheaz et al. (1999) detail information about the project and its activities.

Project activities and outputs

In its first phase, the project concentrated on production and dissemination of information and management training. After an evaluation of phase 1 in 1994, the facilitation of organizational change was added as an integral component of phase 2 (Exhibit 3.2).

Production and dissemination of information

The information component focused on preparation and dissemination of reference books and training materials. The project published two books. *La Administración de la Investigación Agropecuaria: Experiencias en las Américas* (Novoa and Horton, 1994) presents the results of the 13 case studies on PM&E. *Monitoring and Evaluating Agricultural Research: A Sourcebook* (Horton et al., 1993)¹⁴ presents general principles for monitoring and evaluation in the context of agricultural research management, along with 21 information digests on specific tools and methods for monitoring and evaluating agricultural research. It includes annotated references and a guide to further sources of information. These books served as reference works on PM&E for practitioners in the region. The case studies on research management identified priorities for change and examples of good practice. The sourcebook provided concepts and practical tools for monitoring and evaluation – management functions that the 1992 case studies confirmed as deficient in most research organizations in the region.

Preparation of training materials was another important information activity. The training unit of the International Center for Tropical Agriculture (CIAT) in Colombia had developed a participatory approach for preparing training materials and training trainers (Zapata, 1992). The project engaged the services of CIAT to provide technical support for developing the project's own training materials.

Development of training materials began with a three-week workshop at CIAT in May 1993. At that event agricultural research managers from 12 institutions in the region participated in an intensive course in adult education and prepared the first versions of four training modules:

- Module 1. The Strategic Approach in Agricultural Research Management
- Module 2. Strategic Planning in Agricultural Research Management
- Module 3. Monitoring in Agricultural Research Management
- Module 4. Evaluation in Agricultural Research Management

The contents of each module reflect the priorities identified in the diagnostic case studies (Uribe and Horton, 1993b). Module 1 provides an overall approach to strategic management and a framework for an integrated PM&E system in an agricultural research organization. In this idealized model, PM&E is conducted at each major decision-making level: the project, the program, and the organization as a whole. Modules 2, 3, and 4 cover the main phases of the research management cycle: planning, monitoring, and evaluation. Module 2

14. A Spanish-language version of the Monitoring and Evaluation Sourcebook was also published (Horton et al., 1994).

Exhibit 3.2 Schedule of project activities

	1992				1993				1994				1995				1996				1997				
	1Qrt	2Qrt	3Qrt	4Qrt	1Qrt	2Qrt	3Qrt	4Qrt	1Qrt	2Qrt	3Qrt	4Qrt	1Qrt	2Qrt	3Qrt	4Qrt	1Qrt	2Qrt	3Qrt	4Qrt	1Qrt	2Qrt	3Qrt	4Qrt	
Component 1: Information																									
PM&E case studies			■																						
Preparation of books	■	■	■	■	■	■	■	■	■	■	■	■													
Preparation and testing of training materials						■	■	■	■	■	■	■					■	■	■	■	■	■	■	■	
Distribution of information																									
Phase 1 – Books										■	■	■													
Phase 1 – Training materials													■	■	■	■	■	■	■	■	■	■	■	■	
Phase 2 – Training materials																								■	
Component 2: Training																									
Regional workshops						■												■							
Sub-regional workshops							■	■		■									■	■	■				
Component 3: Facilitation of change processes																									
Diagnostic studies																			■	■					
Strategic planning																			■	■	■				
Development of PM&E systems																					■	■	■	■	
Project planning and review																									
Planning workshops															■										
Review workshops										■											■			■	

emphasizes strategic planning. Module 3 outlines the use of the logical framework, management information systems, and internal reviews in monitoring agricultural research. Module 4 offers practical concepts and methods for evaluation.

The training modules were designed for use by instructors. They contain technical subject matter on PM&E supplemented with guidelines and forms to use in planning, delivering, and evaluating training events. After the initial workshop, the training modules were tested at sub-regional training events and reviewed by professional peers. Following numerous rounds of improvement, they were published in early 1995. At the same time, training manuals, containing the same technical subject matter as the modules but omitting the materials for instructors, were published for use by participants at training events.

During the second phase of the project, other training themes were identified and materials developed. The most important new topic was management of organizational change. At workshops, research managers developed guidelines and means of supporting implementation in their own organizations of what they had learned about PM&E. Three new modules were prepared at the second regional training workshop, held in 1996:

- Module 5. Strategic Management of Organizational Change in Agricultural Research
- Module 6. Management Information Systems in Agricultural Research Management
- Module 7. Formulation and Management of Competitive Projects

These modules were subsequently tested, reviewed, and revised. Modules 5 and 6 were published in 1997. The seventh module was substantially revised and issued in draft form the same year along with a set of guidelines on development and implementation of an integrated PM&E system. Exhibit 3.3 provides details on project publications.

Training activities

The project's training strategy involved workshops at the regional, sub-regional, and national levels. The purpose of the regional training events was threefold: to train trainers, to prepare PM&E training materials, and to enhance participants' knowledge, skills, and motivation with respect to PM&E. Participants at these workshops were middle-level managers with experience in planning, monitoring, or evaluation. The workshops built on and supplemented their existing knowledge and skills. They were conducted as intensive professional development seminars in which participants were responsible for preparing the training materials that they would subsequently use at sub-regional or national workshops.

Sub-regional workshops were organized to test and validate the new materials, to provide project trainers with practical experience, and to expand the reach of the project's training efforts. In phase 1, sub-regional workshops lasted for five days with training focusing on the topics covered by the first four modules. During phase 2, sub-regional workshops lasted two weeks so that the three new topics could also be covered. Six sub-regional workshops were of-

Exhibit 3.3 The PM&E project's publications

	Date (year)	Copies produced*		Authors
		Spanish	English	
Books				
Administración de la investigación agropecuaria: Experiencias en las Américas	1994	750		D. Horton, P. Ballantyne, W. Peterson, B. Uribe, D. Gapasin, and K. Sheridan.
Monitoring and evaluating: A sourcebook	1993 and 1994	1000	1500	D. Horton and A. Novoa
Training manuals in the series "Training in Planning, Monitoring, and Evaluation for Agricultural Research Management"				
1. The strategic approach	1995	1000	1250	S. Gálvez, A. Novoa, J. de Souza Silva, M. Villegas
2. Strategic planning	1995	1000	1250	J.E. Borges-Andrade, M.D. Escobar, J. Palomino, R. Saldaña, J. de Souza Silva
3. Monitoring	1995	1000	1250	A. Bojanic, G. Hareau, R. Posada, A.M. Ruiz, E. Solís
4. Evaluation	1995	1000	1250	A. Granger, J. Grierson, T. Quirino, L. Romano
5. Strategic management of organizational change	1997	2000	0	N.L. Díaz, M.A. Fernández, J. López, M.A. Mato, R. Oliva, J. Santamaría, J. de Souza Silva, S.M. Valle Lima
6. Management information systems	1997	2000	0	H. Bolívar, A.M. Gomes de Castro, A. Hernández Sánchez, M.A. Ovelar, E. Sarmiento
Reference materials				
Manual for training trainers	1993	50	0	V. Zapata
Framework for design and implementation of an integrated PM&E system	1997	500	0	A. Granger, A.M. Ruiz, A. Freitas Filho, A.M. Castro, F.A. Araújo Campos, J.A. Borges-Andrade, J. Morales González, J. Santamaría Guerra, M.A. Mato Bode, M.D. Escobar, S.M. Valle Lima, Z.E. Andrade Brei.
Competitive projects	1997	500	0	J. Aued Huerta, A. Chacón Silva, W. Chinchilla Jiménez, L. Mendoza Coronel, V. Trujillo, J. de Souza Silva
Workshop proceedings	1992 and 1997	2600	200	Various

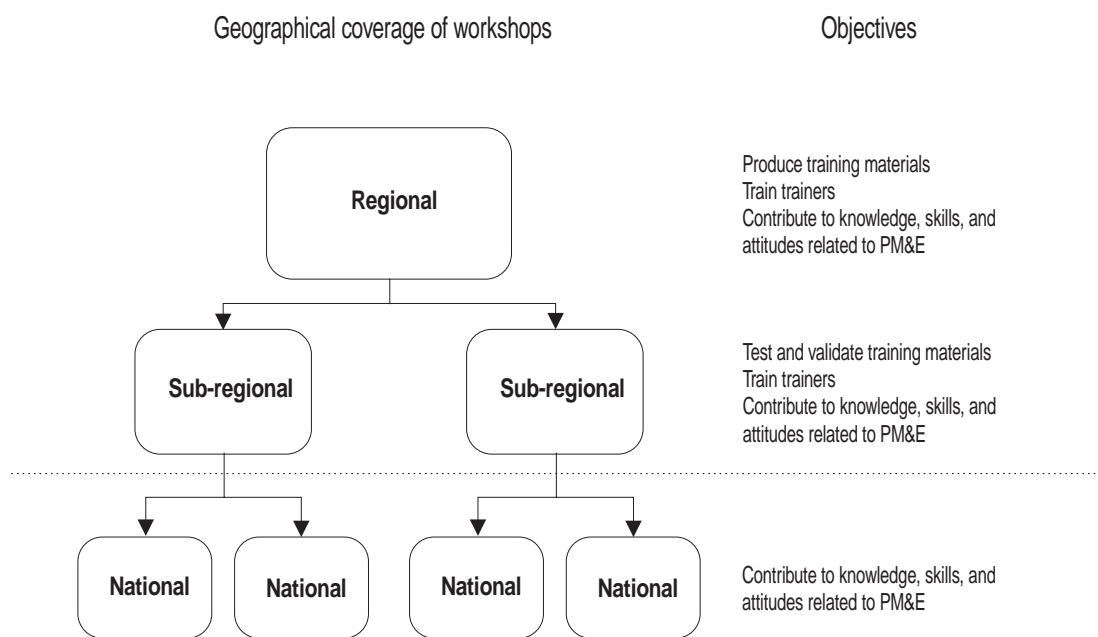
Note: *The number of copies of training materials produced refers to the manuals. Training modules were also produced for each of the six themes: 100 modules for themes 1 through 4 and 200 for themes 5 and 6.

ferred in 1993, 1994, and 1996. In these, 150 research managers participated as trainees and 17 as trainers.

Participants in regional and sub-regional workshops were encouraged to organize national training workshops in their own countries in order to disseminate the concepts, skills, and attitudes promulgated by the project. While the project took responsibility for organizing the regional and sub-regional workshops, individuals in national agricultural research organizations were responsible for the workshops at the national level. Exhibit 3.4 summarizes information on workshops and Annex 2 provides details.

Between 1993 and 1997, some 180 professionals in agricultural research organizations were trained in regional and sub-regional workshops. The training study showed that by early 1998 at least 57 of them – one-third – had organized training events on their own using project training materials (Exhibit 3.5). In addition, 40 of them had offered PM&E training at events organized by others.

Exhibit 3.4 Training workshops organized by the PM&E project and by national collaborators



Regional and sub-regional workshops

Workshop type	Number of workshops	Countries represented	Total duration (days)	No. of participants
Project planning and review	6	25	26	150
Regional training	2	15	44	35
Sub-regional training	6	25	50	151

Note: The PM&E project organized the regional and sub-regional workshops and has complete lists of participants. Participant lists for workshops organized by national organizations were not available to the evaluation team. Project leaders estimate that prior to 1999 at least 3000 participants attended national workshops on PM&E that employed project materials.

Source: Cheaz et al., 1999.

The most frequently addressed topics at these training events were strategic planning and strategic management. Interview data indicate that several project participants also offered university-level courses for which they used project training and reference materials. Lists of participants collected by the project team indicate that between 1996 and 1998 national-level workshops organized by the project trainees had at least 3000 participants.

Facilitation of organizational change in pilot cases

An external evaluation was completed at the end of phase 1 (Tollini and Siri, 1994). It concluded that the project had “introduced PM&E into the agenda of the region’s national agricultural research systems” and that it had produced valuable training materials and a group of highly skilled and motivated trainers (ibid.: 9).

Exhibit 3.5 Training done by PM&E project trainees

	Events organized by	
	The individual	Others
Number of respondents who have trained others	57	40
Training carried out by each of these individuals (averages):		
Number of training events	4	4
Duration of training provided	9	7
Number of participants trained*	79	63

Note: N=144. The figures overstate the number of individuals trained, as some individuals participated in more than one event or were trained by more than one respondent.

Source: Borges-Andrade and Siri, 1999.

The evaluation team identified a main task for the future as the application of the group of trainers and of the knowledge and training materials generated by the project to institutionalize PM&E in agricultural research organizations. The team further recommended that IDB support a phase 2 of the project and encouraged the PM&E project team to focus its future actions on organizations committed to undertaking concrete action to improve their PM&E.¹⁵

Based on these recommendations, facilitation of organizational change became a key element in the planning for phase 2.¹⁶ In light of the project's limited resources, this component was implemented in a small number of organizations that were committed to improving their PM&E systems. These organizations were known as the "pilot cases." Four organizations signed letters of agreement with ISNAR committing themselves to engage in organizational change processes designed to strengthen and integrate their PM&E systems and to share their experiences and results with other organizations in the region. These were the Agricultural Ministry of Cuba (MINAG), the Agricultural and Livestock Ministry of Costa Rica (MAG), the Agricultural Research Institute of Panama (IDIAP), and the Agricultural Research National Fund of Venezuela (FONAIAP).

The four pilot cases made use of publications, training, and facilitation provided by the project, all within a process of change led by members of the organizations themselves. Three key groups of professionals played important roles in the pilot cases:

- *Internal facilitators.* These were staff of each of the pilot case organizations who were already familiar with the project and had participated in regional training workshops. They provided technical leadership for the strategic change teams within their respective organizations.

15. It also recommended that ISNAR establish a project office in the region and that lessons from the PM&E project be extracted and disseminated. Participants at a final project workshop concurred with these recommendations (Saraví et al., 1995).

16. In the original design of phase 2, it was termed "institutionalization" (Cheaz, Horton, and De Souza Silva, 1996).

Large-scale organizational change involves learning and understanding – either as a necessary part of the change process or as the fundamental source of all change (Mohrman et al., 1989: 294).

- *External facilitators.* These were professionals from other organizations in the region¹⁷ who were familiar with the project and contributed expertise and experience to support the change processes in the pilot case organizations.
- *Project team.* The project team provided overall coordination, technical support, and motivation for the change processes.

In 1996 and 1997, the pilot case organizations in Cuba, Panama, and Venezuela carried out strategic planning and undertook a series of actions to strengthen their PM&E systems. After initial contacts, collaboration with the Costa Rica pilot case was discontinued in 1997. To be successful, facilitation needs to be linked to a firm decision to change, and preferably, to an on-going change process. In the case of Costa Rica, neither of these conditions was met. Initially, the Minister of Agriculture requested ISNAR support for change within the research division of MAG. However, there was no clear political decision to introduce fundamental changes into the research division. Nor was support for change negotiated with the division’s managers. As a result, there was confusion over the purpose of the collaboration during the initial project missions to Costa Rica. Lack of clarity concerning the purpose of the collaboration and institutional responsibilities, coupled with frequent personnel changes in MAG led to the discontinuation of the collaboration.

The three pilot cases active at the end of the project were all public entities concerned with agricultural science and technology but with distinct organizational features. SINCITA in Cuba is a research system made up of 17 autonomous institutes employing some 800 researchers. FONAIAP in Venezuela is made up of 18 centers employing some 300 researchers. IDIAP in Panama is a relatively small institute with six centers and 110 researchers (Exhibit 3.6).

Details of the change process differed among the pilot cases, but each engaged in a similar sequence of steps that can be summarized as follows:¹⁸

Exhibit 3.6 The three pilot case organizations and participants in national PM&E workshops

	SINCITA, Cuba	FONAIAP, Venezuela	IDIAP, Panama
Type of organization	National system	NARO	NARO
Components	17 institutes	18 centers	6 centers
Number of researchers	800	300	110
Number of employees	5000	1800	500
Number of participants in national PM&E workshops	741*	438*	205*

Note: * These figures indicate the total number of participants in national PM&E workshops carried out from 1996 to 1998. The figures overstate the number of individuals trained as many participated in more than one event.

Source: Aued et al., 1999.

17. EMBRAPA and the University of Brasilia in Brazil and INTA in Argentina.

18. This section draws upon the pilot case self-assessment workshop that took place in Maracay, Venezuela in April 1999 (Aued et al., 1999)

1. decision to initiate a change process
2. signing a letter of understanding with ISNAR
3. diagnostic study of the PM&E system
4. participation in the 1996 regional training workshop
5. participation in a sub-regional training workshop
6. preparation and validation of a list of principles and steps to guide the change process
7. formation of a change management team
8. strategic planning
9. design of a new research and development model for the organization
10. design of an integrated PM&E system
11. preparation and validation of a manual of PM&E policies and procedures
12. implementation of the new PM&E system

The organizations often moved on to subsequent steps before the strategic planning process was completed. As an integral part of the change process, a large number of professionals within each pilot case organization participated in national workshops, which together numbered more than 50. By the end of 1997, SINCITA-Cuba had reached the final step in the change process, FONAIAP had reached step 11, and IDIAP had reached step 10.

Project management and resources

During phase 1, the project was managed from ISNAR headquarters in the Netherlands. At the start of phase 2, a project office was established in Quito, Ecuador and staffed by the project leader, an associate, and an executive secretary. The project team was responsible for obtaining and managing funding, leading and coordinating activities, producing and distributing publications, organizing workshops, and facilitating change processes in the pilot cases. Participants from the region were engaged in writing publications and delivering training.

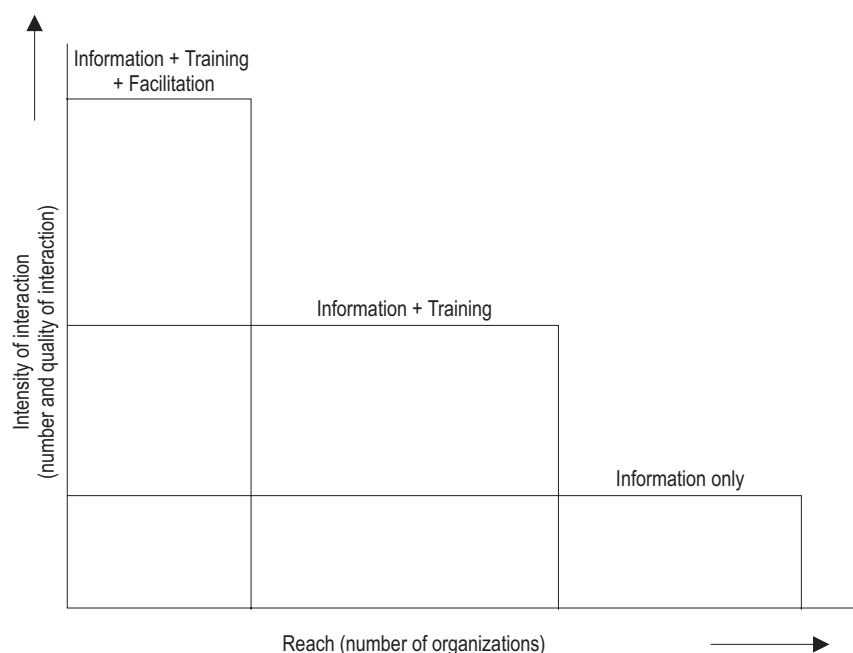
Total project funding was approximately US \$3.9 million over six years. Funds were provided by several international development agencies, ISNAR's core budget, and collaborating organizations (Annex 3). Organizations in the region made very substantial contributions to the project, valued at about \$500,000. About two-thirds of the operating budget was used for regional planning, review, and dissemination workshops and for regional and sub-regional training events. One-fifth of the operating funds were used to publish the project's reference books and training materials. The remaining one-fifth was used for travel and related costs of facilitating change in the pilot cases. The project team was active in each of these activities, and especially so in the preparation of publications and the facilitation of organizational change. Consequently, roughly equal shares of project resources were used for the information, training, and the facilitation components, and a slightly lower share was used for planning and review workshops.

Development cannot be created or engineered. As a process, it exists independently of the development practitioner. All that we can do is facilitate processes which are already in motion. Where they are not in motion, it would be the best – and honest – to refrain (Kaplan, 1999: 16).

Project reach and intensity of interaction with clients

Following Montague (1997), capacity development interventions can be characterized by their reach and intensity of interactions with clients. Reach refers to the breadth of influence over which an intervention spreads its resources: the number and type of clients it serves. Intensity of interaction refers to the amount of time, money, and energy expended in interacting with clients.¹⁹ The relationship between reach and intensity of interaction of the three project components is illustrated in Exhibit 3.7.

Exhibit 3.7 Relationship between reach and intensity of interaction in the three project components



Source: Adapted from Montague, 1997.

The project’s information component had the greatest reach and least intensity of interaction with clients. Publications were sent to many individuals and organizations within and beyond Latin America. The intention was to offer relevant information about PM&E to the public at large and, at the same time, to support training initiatives and the change processes in the pilot cases. More than 500 professionals working in some 140 agricultural research organizations around the world received project publications. They were distributed through ISNAR’s mailing lists, to individuals who requested them, and to those who participated in project workshops.

19. Montague (1997: 6) uses the term “resources” rather than “intensity of interaction.” For the purposes of this evaluation study, we prefer the latter term because it draws attention to the interaction among the project team, collaborators, and the clients. This collaborative interaction was a distinctive feature of the PM&E project.

The project's training, which entailed direct interaction between the project team and agricultural research managers, reached fewer individuals and organizations. The project provided training in PM&E and management-related topics to some 150 middle managers from 60 organizations in Latin America and the Caribbean. Some managers participated in several workshops, first as trainees and later as trainers. Planning and review workshops, which brought together senior managers of organizations in the region, also represented an intermediate level of reach and intensity. Participants learned how PM&E could be a valuable tool for use in managing their organizations. They also shared experiences with each other and with the project team enabling the project to benefit from their knowledge and experience.

Pilot case facilitation was a long-term, intensive effort. Here, the project's reach in terms of the number of organizations served²⁰ was smaller but the intensity of its interactions with clients was far greater. Work with the pilot case organizations offered ample opportunities for dissemination of publications and training materials and for participation in regional, sub-regional, and national workshops. More importantly, it provided direct support for organizational change. Project personnel and external facilitators joined forces with managers and collaborators in pilot cases to facilitate strategic planning, to design and implement integrated PM&E systems, and to guide organizational change processes.

The intensity of the pilot case interventions is reflected in the large number of people trained in each of these cases (see Exhibit 3.6).

Chapter 4 returns to issues of reach, intensity of interaction, and the results achieved via different intervention strategies.

20. Defining reach as the number of organizations worked with has some limitations. For example, SINCITA in Cuba is made up of 17 autonomous institutes.

4. Contributions to Individual and Organizational Capacity

As introduced in Chapter 2, the evaluation of the PM&E project included five studies. The previous chapter was based on the first evaluation study: a descriptive review of the project. This chapter presents results of the remaining evaluation studies and the complementary information. Detailed information on project impacts at the level of individuals and organizations is included in annexes 4 and 5 at the end of this report. After presenting results for each study, the chapter closes with a brief synthesis of the results.

Results of the information study

The information study was conducted to learn about the use and impacts of the publications produced and distributed during phase 1 of the project, that is, the project's two books and its first four training modules and manuals.

A questionnaire on the publications' impacts was mailed to 501 individuals – all those who were known to have received one or more of the publications and for whom addresses were available. A total of 144 individuals responded, representing 40 organizations in 24 countries. Most respondents occupied managerial positions in agricultural research organizations. About 40 percent of them also carried out research, extension, or training activities. Approximately 90 percent of respondents were from Latin America or the Caribbean. Sixty percent came from the four pilot case countries (Costa Rica, Cuba, Panama, and Venezuela); 30 percent were from 11 other countries in the region, and the remaining 14 respondents were from six countries in Africa, Asia, Europe, Oceania, and North America.

The relatively low response rate for this survey (29%) is not untypical for studies of this nature.²¹ The survey form was sent to all persons known to have received project publications. These included representatives of regional and international organizations, donor agencies, and private firms, few of whom were expected to respond. There were also problems with out-of-date addresses. Some individuals simply did not take the time to complete the survey

21. According to Lebow (1983), the average rate of response for postal surveys is 40%. Based on a review of methodology texts, Goyder (1985) found the expected response rate for a mailed questionnaire to range from 30% to 70% with an average or “acceptable” rate around 50%. In a recent assessment of impact of IFPRI's 2020 Vision for Food, Agriculture and the Environment Initiative, Paarlberg (1999) generalized findings from surveys with response rates of 16% (survey of recipients of publications) and 32% (survey of participants in meetings). In the African context, a USAID evaluation study for the training programs of the Southern African Centre for Co-operation in Agricultural & Natural Resources Research and Training (SACCAR) had a response rate of 23% (Anandajayasekeram et al., 1994). At the conference “Global Knowledge '97” the response rate for an evaluation distributed *in situ*, was 35% (Mancini et al., 1998). In all these cases, survey findings tend to be treated as if they were valid estimates for the entire population. For a fuller discussion on response rates, see Andersen (1999).

instrument. Implications for the interpretation of findings are discussed in the following section on the results of the training study.

The survey instrument solicited information on the use and usefulness of the project publications. The core of the instrument requested assessments of impacts of the information received at the level of the individual recipient and at the organizational level. It asked for both quantitative and qualitative impact assessments. Respondents were to rate the impact of the project information according to 11 indicators at the individual level and another 11 at the organizational level. For the rating, respondents used a 5-point scale ranging from 0 to 4 (“no impact” to “very large impact”). Where respondents indicated that impacts had occurred, they were requested to provide “concrete and detailed examples of the impact.” The impact scores were analyzed statistically and examples of impact were coded, sorted, and analyzed in relation to the evaluation framework.

Use of project information

A large majority of respondents who received training manuals indicated that they read them in their entirety (Exhibit 4.1). About 85 percent read the manuals on strategic management and strategic planning, and 75 percent read those on monitoring and evaluation. Most of the respondents who received the two project books read parts of them; some 40 percent read the books in their entirety.

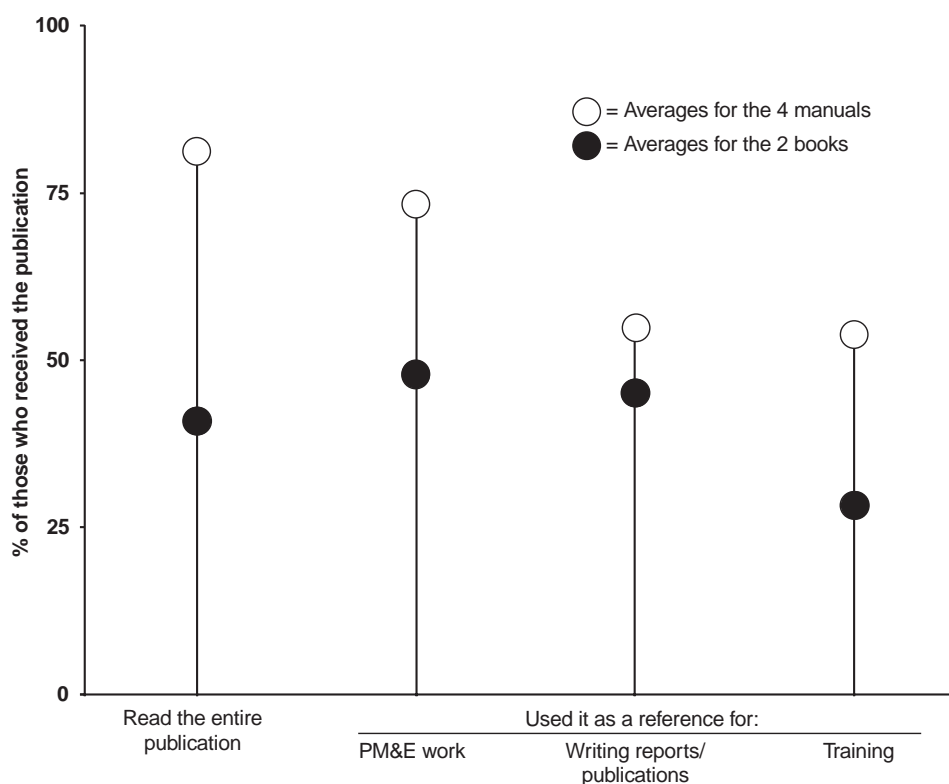
More than two-thirds of the respondents who received project training manuals and about 60 percent of those who received the Monitoring and Evaluation Sourcebook indicated that they used these publications in their planning, monitoring, or evaluation activities. In contrast, only around 40 percent of those who received the case studies on PM&E in the region indicated they had used them in their work.

About 60 percent of those who received the manuals on strategic management and strategic planning and 45 percent of those who received the manuals on monitoring and evaluation indicated that they had used them to train others. One-third of those who received the Monitoring and Evaluation Sourcebook also used it in training.

Respondents to the information survey considered the project publications – particularly the training materials – to be more useful than publications on the same subjects available from other sources (Exhibit 4.2). The training manuals were considered especially useful, due to their brevity and clarity, the relevance of the topics covered, the integrated PM&E framework presented, and the fact that they were developed by professionals in the region. For many respondents, the project publications were their principal reference materials for PM&E.

Exhibit 4.1 Informants who received, read, and used project publications

(a) Percent of recipients who read and used the publications (averages for training manuals and books)

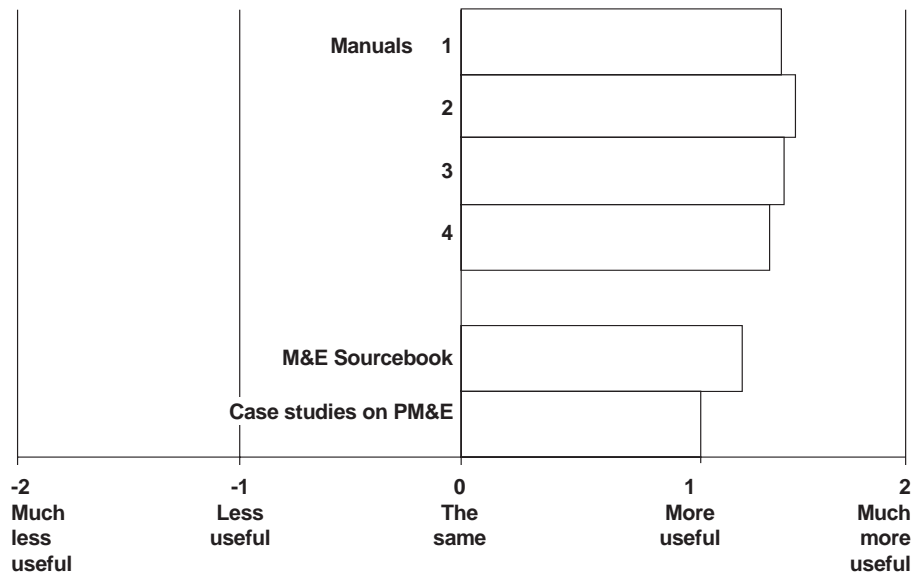


(b) Recipients who received, read, and used the publications

	Training manuals					Reference books		
	1	2	3	4	Average	M&E Sourcebook	Case studies of PM&E	Average
Number of informants who								
Received the publication	94	97	90	88	92	51	44	48
Read the entire publication	80	84	68	66	75	19	20	20
Read part of the publication	30	31	40	39	35	42	33	38
Used it as a reference for								
PM&E work	64	74	69	61	67	29	17	23
Writing reports/publications	57	59	44	43	51	26	17	22
Training	59	58	40	39	49	17	10	14
Percent of recipients who								
Read the entire publication	85	87	76	75	81	37	45	41
Read part of the publication	32	32	44	44	38	82	75	79
Used it as a reference for								
PM&E work	68	76	77	69	73	57	39	48
Writing reports/publications	61	61	49	49	55	51	39	45
Training	63	60	44	44	53	33	23	28

Source: Siri and Borges-Andrade, 1999.

Exhibit 4.2 Perceived usefulness of project publications in comparison with similar publications from other sources



Note: N=144

Source: Siri and Borges-Andrade, 1999.

Impacts at the individual level

Mean scores for impact of information ranged from 2.40 to 3.16 on the 5-point scale. The standard deviations ranged from 0.83 to 1.26, suggesting a reliable concentration of observations around the calculated means. Scores were highest for indicators of motivation to improve PM&E and capacity to undertake PM&E. Performance scores were higher for indicators related to planning than for those related to monitoring and evaluation (Exhibit 4.3). The scores for impacts on training were also high.

Respondents to the information survey provided 325 examples of specific impacts at the individual level. These examples were tabulated and classified according to the four dimensions of motivation, capacity, environment, and performance. Of the examples 89 were related to individual motivation, 127 to capacity, 100 to individual performance, and 9 to the working environment. Exhibit 4.4 presents representative examples. Most of the impacts reported relate to the execution of PM&E tasks, application of principles of strategic planning and strategic management, project design and management, and training colleagues in PM&E.

Impacts at the organizational level

Mean scores for the 11 indicators of impact at the organizational level were lower than those reported at the individual level, ranging from 2.22 to 2.89. Standard deviations remained relatively low (1.00 to 1.33). Impact scores were highest for indicators related to the capacity for teamwork and the openness of personnel to change in the organization. They were lowest for indicators re-

Exhibit 4.3 Impacts of publications: mean scores for selected indicators

Mean scores	Standard deviation	Indicators	Assessment dimension
Indicators of impact at individual level			
3.16	0.92	Motivation to improve PM&E in organization	Motivation
3.02	0.83	Capacity to do PM&E	Capacity
2.87	0.88	Performance in work	Performance
2.70	1.24	Application of more effective training techniques	Performance
2.68	1.10	Development of institutional plans	Performance
Indicators of impact at organizational level			
2.89	1.00	Undertaking teamwork	Capacity
2.82	1.11	Stimulating personnel to be more open to change	Motivation
2.60	1.09	Performance of the department/unit	Capacity
2.59	1.21	Mission of organization	Motivation
2.52	1.05	PM&E capacity in organization	Capacity

Note: In this and following exhibits presenting scores for impact indicators at different levels, the scores refer to a Likert-type 5-point scale from 0 (no impact) to 4 (very large impact).

Source: Siri and Borges-Andrade, 1999.

lated to the culture of the organization and improvements in organizational structures (see Exhibit 4.3).

Survey respondents provided 375 examples of impacts at the organizational level, of which 127 were concerned with organizational motivation, 216 with organizational capacity, 23 with organizational performance, and nine with the organization's operating environment. Exhibit 4.4 provides representative examples. In the motivational dimension, most impacts referred to motivation to improve PM&E practices (in order to improve management and institutional sustainability) and to awareness of the need for organizational change. Most examples of impacts on organizational capacity referred to PM&E in general and, more specifically, to strategic planning, strategic management, training in PM&E, teamwork, and project development.

Most information survey respondents had participated in project training events. For this reason, in some cases they may have conflated impacts of information with those of training. Exhibit 4.5 presents some examples of changes brought about by the project's information in isolation from its training activities.

The training materials developed by the project were also reported to be used in university courses (Exhibit 4.6).

Constraints to the impact of project information

Although not specifically asked to do so, about 20 percent of respondents reported constraints to the impact of information disseminated by the project. Most of these constraints related to problems in the respondents' own organizations, which provided little opportunity or encouragement for the application

Exhibit 4.4 Examples of impacts of publications at individual and organizational levels

The 144 respondents to the information survey reported a total of 325 examples of impacts at the individual level: 89 on motivation, 127 on capacity, 100 on performance, and nine on environment. Below, a representative selection is presented of impacts in the capacity and performance dimensions. Respondents also reported 375 examples of impacts at the organizational level: 127 on motivation, 216 on capacity, 23 on performance, and nine on environment. At the organizational level, a representative selection of impacts is presented.

Impacts on individual capacity

- The publications have been reference materials which I have studied regularly to develop PM&E proposals for the organization (Uruguay).
- The modules and the training on PM&E widen researchers' previously partial vision, engaging them into the environment, permitting a medium and long range vision of the institution and its programs (Venezuela).
- The form and content of the materials made it possible for someone like me, with some experience in agricultural research to master the concepts and applications in order to make improvements in their daily work (Paraguay).
- Repeated reference to the materials has enabled me to tailor actions to suit my own PM&E requirements (Venezuela).
- Formerly I was using ad hoc methods and techniques of planning, monitoring, and evaluation. Also, I lacked adequate materials which could serve for both reference and teaching purposes. When I received your modules I used them to upgrade my skill and refine my approach at the same time as using them to provide training for others. The approach offered in the modules is also used for management purposes other than research planning, monitoring, and evaluation (Ethiopia).

Impacts on individual performance

- The materials helped me draft a proposal for organizational change within my organization and to write proposals for program and project planning, monitoring, and evaluation for use in our regional jurisdiction (Argentina).
- By providing me with a range of potential options from which to choose, the materials helped me choose and set new objectives for the improvement of PM&E (Uruguay).
- Scrutiny of modules 1, 2, 3 and 4 has allowed me to refine the work plans for the group which I lead. So now we have a draft work plan until the year 2000. This plan is based on current and projected requirements in the animal production sector and has an integrated and multi-disciplinary perspective (Cuba).
- I have extended the application of this PM&E methodology to activities beyond the four walls of my own organization and have even applied them to organize my home life (Costa Rica).
- The materials have helped me improve my planning capabilities and to draft effective proposals and projects. The reports I prepare for my director are more concise and better structured than they were previously (Ghana).

Impacts on organizational motivation

- Senior management is totally convinced that the sustainability of this organization depends on adopting a strategic approach to planning and so has made management sensitive to this at all levels (Venezuela).
- All those technical people who have learned about PM&E (research program leaders, regional heads of extension services) have been motivated to apply it in practice (El Salvador).
- The seed of a new organizational culture has been sown and can be seen by comparing the approaches used before and after the various project training workshops and distribution of materials (Cuba).
- Has indirectly influenced the faculty members to prepare concept papers and training manuals (like the ones prepared by ISNAR on PM&E) in other areas as well (India).
- I think project publications have had an impact on organizational culture now that the majority of our technical people are enthused by and actually apply the approaches promoted in the materials (Panama).

Impacts on organizational capacity

- These materials served as fundamental tools in the development of the strategic plan for our organization (Cuba).
- The materials have served as the basis for improving internal training courses (Uruguay).
- Technical specialists in our organization use the materials to develop their research projects making use of the logical framework tool (El Salvador).
- Until recently, we had two sections within the organization working independent of one another. Having learned from the modules, our planning and our monitoring sections now regularly hold joint meetings to exchange ideas (Ghana).
- We incorporated ideas from the project materials into our evaluation practices (Brazil).

Source: Siri and Borges-Andrade, 1999.

Exhibit 4.5 Impacts of project publications in Cuba and Nepal

SINCITA, Cuba

Institutional reform in Cuba in the early 1990s underscored the urgent need for its science and technology institutes to determine how best to serve the country's needs. Cuba's SINCITA is made up of 17 national agricultural research centres. By early 1994 SINCITA was considering major reorganization in response to national institutional reforms. Its future would depend on the relevance and effectiveness of its reorganization effort.

In 1994, Cuba's vice-minister of development and technical services (Ministry of Agriculture) attended a regional meeting of the PM&E project. There he obtained copies of the project publications. Impressed by their relevance to the challenges facing SINCITA, he made copies widely available as a contribution to the consultative process to give direction to SINCITA's planned organizational reform. After undergoing detailed review, the PM&E project documents were adopted to orient scientists to the nature and process of effective organizational change.

The SINCITA team responsible for the subsequent workshops was not initially trained by the PM&E project. On their own initiative and using PM&E project materials, the team trained more than 300 managers and scientists. The strategic approach (Module 1 of the project materials) was unanimously adopted as the guiding principle of their change process. This initiative based on the acknowledged utility of PM&E project information, led to SINCITA's becoming a pilot case in the second phase of the PM&E project.

The LUMLE Agricultural Research Center in Nepal

The LUMLE Agricultural Research Center in Nepal used ISNAR publications as inputs for the creation of their PM&E system. Managers and scientists made extensive use of PM&E training manuals as well as another ISNAR publication on program planning (Collion and Kissi, 1995).

The efforts required the development of accompanying guidelines to direct the implementation of the PM&E system. The design of the system and guidelines for its use resulted in a progressively more effective PM&E system that includes appropriate indicators which scientists use to monitor and manage their research activities.

In keeping with the spirit of the PM&E training manuals and ISNAR reference materials, those responsible for the design and operation of the system adopted key concepts and approaches provided in the publications and used these to prepare unique instruments of immediate relevance to their own specific needs. This creative construction process contributed directly to their becoming fully familiar with the concepts and acquiring full command over the resulting PM&E instruments which were closely integrated with the logical framework analysis approach they used to formulate their goals for organizational change.

The ISNAR project materials represented one concrete contribution, among others, to the challenge of establishing an effective PM&E unit at LUMLE.

Source: Mato et al., 1999 and personal communication with Prataf Kumar Shrestha, former head of the PM&E unit at LUMLE, Nepal.

of management approaches promoted by the project. The need to translate broad principles into concrete actions was also noted. Representative examples appear in Exhibit 4.7.

Results of the training study

The training study sought information on the results of project training activities and on factors that might have limited impacts. A questionnaire was mailed to all those who had participated in training events. In the pilot case organizations, additional questionnaires were distributed by the contact persons to participants in national events. A total of 319 questionnaires was distributed and 144 responses were obtained from 43 organizations in 22 countries in Latin America and the Caribbean. About half of the responses came from pilot case countries and the other half were from 18 other countries. Most respondents occupied managerial positions in agricultural research organizations. The "average" respondent allocated his or her time as follows: 29 percent to PM&E activities, an additional 30 percent to management in general, 20 percent to research, 10 percent to teaching or training, six percent to extension, and five percent to other activities.

Exhibit 4.6 Use of project publications in universities

The project prepared its training materials to serve as aids in short courses organized for middle-level managers in agricultural research organizations. But information gathered during the evaluation indicates that they were also used in universities. Two examples follow:

"New Agricultural Leadership for Sustainable Development" Program, Centro para el Desarrollo Agropecuario y Forestal (CEDAF), Dominican Republic

CEDAF has been implementing the training program "New Agricultural Leadership for Sustainable Development" since 1997 leading to a master's degree in generation and transfer of technology. The program's objective is to contribute to raising the living standard of low-income groups in the Dominican Republic by improving production systems through the training of a new generation of agricultural leaders. The training program, co-sponsored by the Kellogg Foundation and offered by the Instituto Superior de Agricultura and the autonomous university of Santo Domingo, aims to form a critical mass of agricultural and forestry professionals capable of identifying priorities and opportunities for technology generation and transfer.

A research management course has been developed as a part of the program. According to CEDAF, the creation of this course was inspired by ISNAR's PM&E project and the four manuals in the series "Training in planning, monitoring, and evaluation for agricultural research management." The materials have been amply reproduced with the authorization of ISNAR and now form the basis of the course.

CEDAF became aware of the materials when professionals participated in a project evaluation workshop (Costa Rica in 1994). Later, other professionals attended the planning workshop for the project's phase 2 (Ecuador in 1995) and a sub-regional training workshop (Panama in 1996).

"Strategic Planning Workshops for Universities", Inter-American Institute for Cooperation on Agriculture (IICA), Costa Rica

IICA has been in frequent contact with the PM&E project since the project began in 1992. IICA representatives have participated in the project's planning, review, and evaluation workshops as well as in regional and sub-regional training of trainers workshops.

The PM&E project's manuals were used as a basis for developing training materials that were applied and validated in training workshops organized by IICA in the university sector. The materials were adapted, the methodology adjusted, and a series of visual aids for training in strategic planning were developed.

Materials produced to date (Ramirez, 1997) have been progressively tested and refined in some 20 strategic planning workshops involving around 500 participants from university faculties and post-secondary institutions in various countries in Latin America and the Caribbean including Argentina, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, the Dominican Republic, Paraguay, Peru, Puerto Rico, and Uruguay.

A second wave of field trials using these materials was undertaken in workshops lasting five days' each, for deans of university faculties actively engaged in agricultural research. A total of 150 deans attended these regional events, which were held for the southern region in Chile, for the Andean region in Venezuela, for the Caribbean region in Trinidad and Tobago, and in Costa Rica for the central region and Mexico.

Later, using the revised and refined materials, training was extended beyond the university and formal educational sectors to provide professional training for some 200 extension workers attending six strategic planning workshops held in Guatemala, Honduras, Nicaragua, El Salvador, Costa Rica, Panama, and the Dominican Republic.

The IICA team of trainers reports that these efforts have resulted in many organizations and centers of different kinds adopting the strategic approach in their planning efforts. The reported successes of these IICA activities also demonstrate the flexible nature and the broad usefulness of the PM&E project materials. They can be adapted and used effectively to meet the needs of a variety of users in extension, higher education, professional in-service training, and other areas.

Source: Personal communications with Jose Ramirez, training unit of IICA, San Jose, Costa Rica, and Altagracia Rivera de Castillo, Director of CEDAF, Dominican Republic.

With a response rate of 45 percent, the validity of the training survey results could be questioned. In order to gauge the extent and nature of possible bias, the evaluation team analyzed the profiles of respondents and non-respondents (Andersen, 1999). The analysis showed that while survey respondents represented a wide array of individuals and organizations, they were not strictly representative of the population of trainees. Respondents generally attended more and longer training events than did nonrespondents. Moreover, a disproportionately large share of the respondents was from the pilot case organizations. In other words, the survey respondents tended to be more actively involved in project training and its other activities than were non-respondents.

Exhibit 4.7 Examples of constraints to the impact of project publications

The following quotes are representative examples of reported constraints to the impact of information disseminated by the project.

- There have been many difficulties in the formulation of strategic plans in the experimental stations. The lack of methodology for the development of strategic plans is notorious. There is the need for not only theoretical knowledge concerning strategic planning but a strategic attitude is required. No radical changes are observed. The strategies proposed are excellent, but their application will be seen in the long term (Ecuador).
- A project participant tried to create a PM&E system, but nevertheless the institution disregarded it (Costa Rica).
- At present, these proposals should pass from the theoretical or rhetorical stages to be part of the institutional culture. It is premature to talk about impact on institutional performance. Nevertheless, in the short term they will be reflected in the new strategic plan (Venezuela).
- I have not found an answer in the institution. The traditional vision of administration has not permitted it (Colombia).
- The process here has been very slow. As it involves a system, there are many actors that intervene, as well as different interests. Becoming committed to a common mission and objectives is difficult (Costa Rica).
- [Impacts] are considered relative or moderate due to resistance to change. Nevertheless, a predisposition exists, and more motivation and training is required especially at the level of directors. A positive attitude toward change exists at the level of the national program for work directed at solving problems (Peru).

Source: Siri and Borges-Andrade, 1999.

Due to the differences in characteristics of respondents and non-respondents, one should not generalize the frequency or level of impacts reported to the total population of trainees. Nevertheless, for the pilot cases and other organizations in the region that were in contact with the project, survey results provide useful indications of the types of impacts, the patterns of impact (in relation to the four dimensions of the evaluation framework), and the ways in which impacts were brought about.

The training survey instrument solicited assessments of training impacts at the level of the individual participant and at the level of the organization. It requested both quantitative and qualitative assessments. Respondents rated the impact of training according to 43 indicators at the level of the individual and 38 indicators at the organizational level. As in the information survey, a 5-point scale was used, with the extremes corresponding to “no impact” and “very large impact.” Where respondents reported impacts, they were requested to list the main impacts that had occurred “as a result of your participation in the project’s workshops.”

In addition to assessment of impacts at the individual and organizational levels, the survey instrument asked if participants thought the project would have “important impacts” on their organization in the future. Where respondents reacted positively, they were asked to explain what impacts they expected. The instrument also asked respondents to identify what actions the project could have taken to be of more use to their organization and what their organization could do to enhance the project’s impacts in the future.

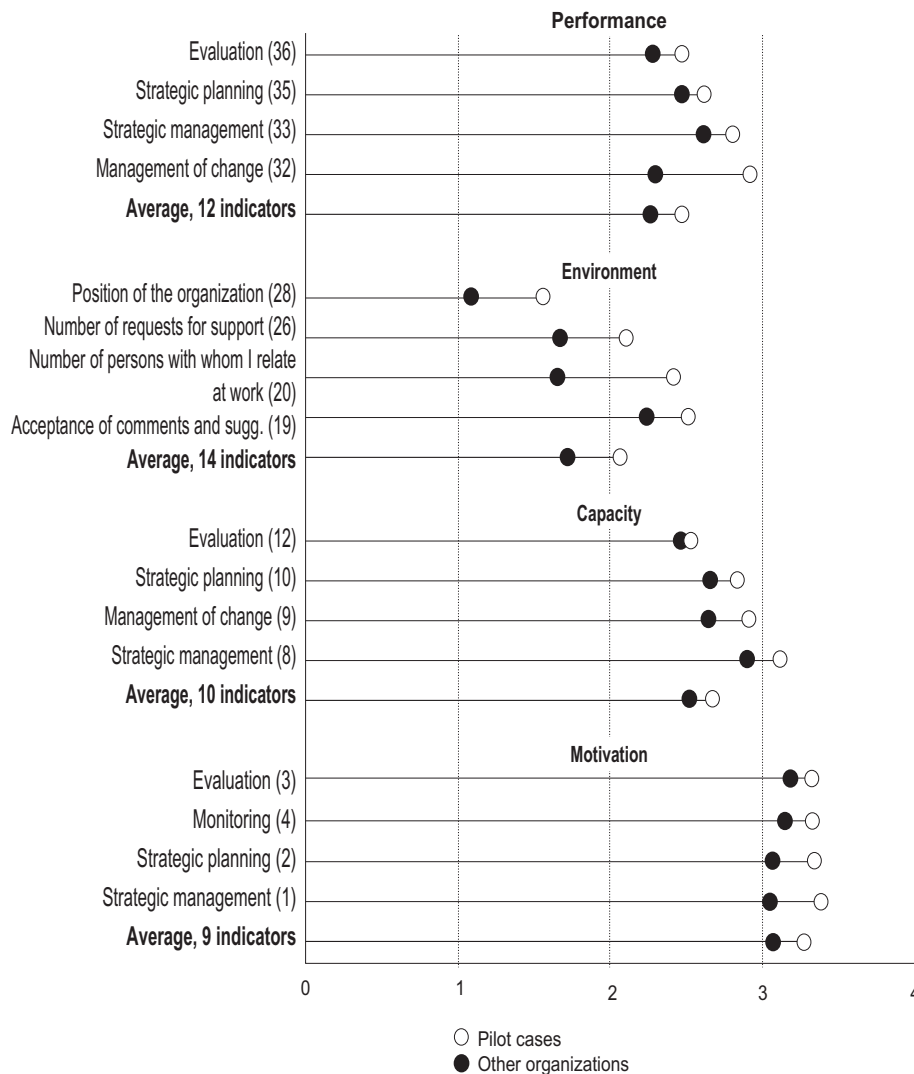
As in the information survey, impact scores were analyzed statistically and the examples of impact were coded, sorted, and analyzed in relation to the key variables in the evaluation framework.

Impacts at the individual level

Since respondents in the pilot cases were exposed to more intensive complementary project interventions than respondents in other organizations, impact scores were analyzed for these two populations separately. Results showed the pattern of scores for the 43 indicators to be similar for the two groups of organizations, although average scores were somewhat higher in the pilot cases. Average scores for all but two of the 43 indicators, were higher in the pilot cases than for other organizations (Annex 4 and Exhibit 4.8).

In the pilot cases, average scores ranged from 1.09 to 3.38. Scores were highest for indicators of impact on individual motivation and somewhat lower for indicators of impact on capacity and performance. Impact scores in the environmental dimension tended to be lower than those in the other dimensions. In the

Exhibit 4.8 Impacts of training at the individual level: mean scores for selected indicators and averages for all indicators in four dimensions



Notes: N=114. Numbers in brackets correspond to the indicators listed in Annex 4. Scale: 0 = no impact, 4 = large impact.

Source: Annex 4.

dimensions of motivation, capacity, and performance, impacts on variables associated with strategic management and strategic planning were at the top of the range, those related to monitoring and evaluation in the middle, and those associated with project management and management information systems at the bottom. Scores for indicators of impact on the environment tended to be lower and the dispersion of scores was also higher in this dimension. Relatively high impacts were reported for some variables, such as the degree to which tasks require creativity and innovation and the degree to which suggestions are accepted by colleagues. Much lower impacts were reported for indicators associated with the size of the budget managed and the facilities available for PM&E work.

In contrast to the pilot cases, scores reported in the other organizations were somewhat lower, ranging from 1.05 to 3.18. However, the differences between average scores in the two groups of organizations were statistically significant²² for only eight of the 43 indicators. Significantly, four of these eight indicators referred to motivation, capacity, and performance related to strategic planning and management. The other four indicators related to environmental variables that condition such activities.

Survey respondents provided 276 examples of impacts of training at the individual level. Of these, 75 related to individual motivation, 120 to capacity, 23 to the working environment of the individual, and 58 to individual performance. Exhibit 4.9 shows representative examples. In the motivational dimension, examples referred mainly to changes in attitudes concerning research management and PM&E and, more specifically, to the value of strategic planning, strategic management, and the need for institutional change.

Examples of impact in the dimensions of individual capacity and performance relate primarily to the following areas:

- PM&E in general
- strategic planning and strategic management
- project development and management
- training in PM&E

The few impacts reported on individuals' working environment referred principally to greater recognition of work by supervisors or peers.

Impacts at the organizational level

At the organizational level, as at the individual level, the pattern of scores from pilot cases was similar to that from other organizations, but average scores were higher for pilot cases. Average scores for indicators at the organizational level were lower than those at the individual level. The range of scores for individual indicators was also smaller. In the pilot cases, average scores ranged from 1.88 to 3.05; for other organizations they ranged from 1.71 to 2.43 (Annex 5 and Exhibit 4.10).

22. At the 0.5% level.

Exhibit 4.9 Examples of training impacts at the individual level

The 144 respondents to the training survey reported a total of 276 examples of impacts at the level of the individual. Of these, 75 were in the motivational dimension, 120 on capacity, 23 on individuals' environments, and 58 on performance. Below is a representative selection of examples reported in each of the four dimensions.

Impacts on individuals' motivation

- My participation in the PM&E workshops has reinforced my opinion that a sound and appropriate PM&E system is the "spinal column" of the organization (Ecuador).
- I have a broader and more realistic perspective and am now convinced of the need for change (Cuba).
- A fuller appreciation of the importance of the strategic approach, the results produced by employing such an approach, and the benefits that accrue to managers as they search for integrated and sustainable science and technology organizations (Colombia).
- Appreciation that teamwork provides a clear way to achievement (Venezuela).
- Project training has increased my personal motivation to engage in strategic planning and my use of this approach has influenced my contribution to the revision of plans of specific centers (Brazil).

Impacts on individuals' capacity

- An increase in my capacity to employ effective training methods (El Salvador).
- I have increased my capabilities to design competitive projects (Dominican Republic).
- A feeling of "regional unity." I came to appreciate better the differences, similarities, and potential for joint undertakings in Latin America (Brazil).
- I benefited from the ordered and systematic mastery of PM&E methods and techniques. The exercises in the workshops which promoted and consolidated increased learning were very important to my development (Argentina).
- A notable increase in my management capabilities particularly in my ability to contribute with confidence to strategic planning and change efforts in my organization (Venezuela).

Impacts on individuals' working environment

- I was appointed coordinator of planning in 1995 (Colombia).
- I have increased the number of colleagues with whom I am able to share ideas (Dominican Republic).
- Increased personal contacts in the region and internationally with organizations and people who share interests in PM&E. This has enriched the opportunity for support, exchange and stimulation (Uruguay).
- Improved interaction between beneficiaries and partners (producer groups, universities, and other organizations) in the research enterprise undertaken in my state (Mexico).
- (I experienced) a greater feeling of respect and appreciation in the workplace (Saint Vincent).

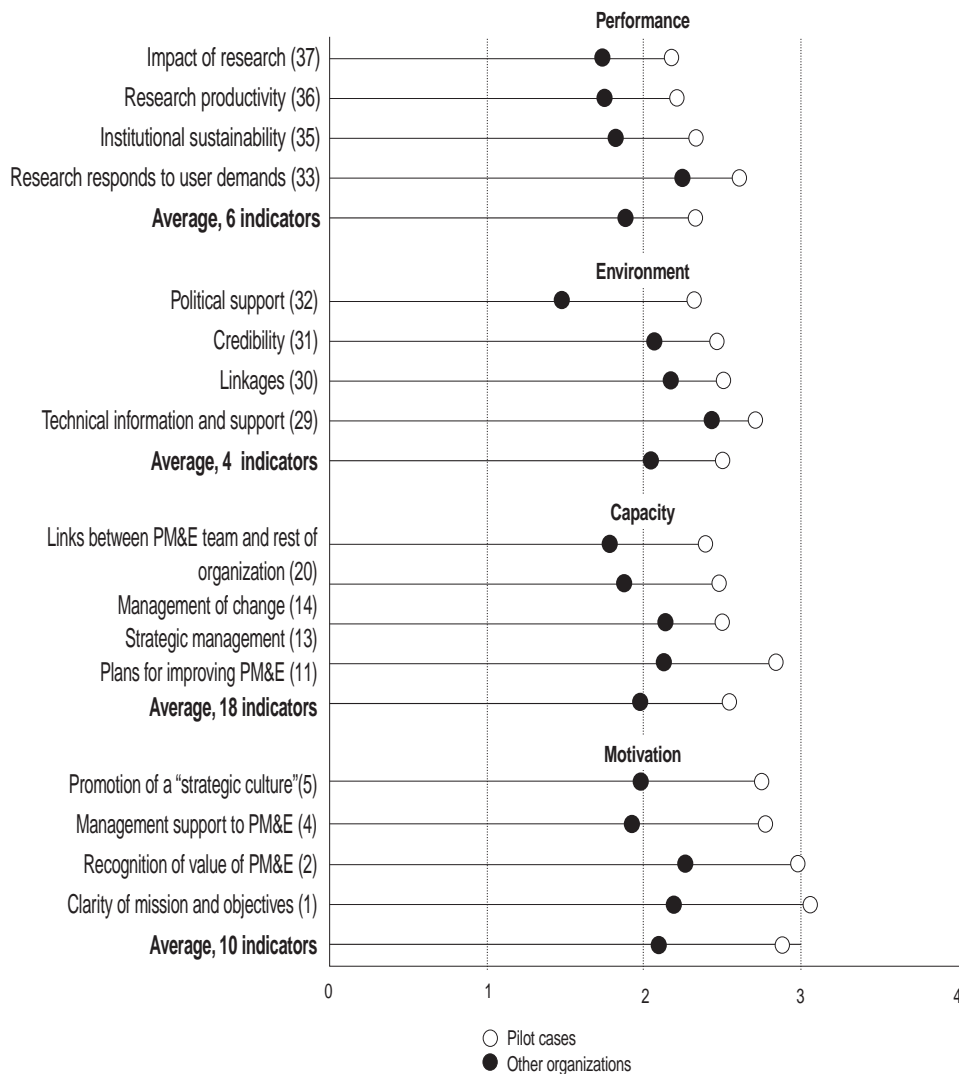
Impacts on individuals' performance

- My increased expertise in evaluation helped us to design an evaluation strategy for agricultural extension in coffee and cocoa production (Cuba).
- The learning and capabilities acquired in the workshop helped me improve our organization's on-going planning, programming, and monitoring efforts (Colombia).
- Project training contributed to improved research project design (Uruguay).
- The workshops improved the effectiveness with which I am able to undertake the development of training materials (Barbados).
- Improvements in my professional performance as coordinator of the organizational change process and as national director of planning (Panama).

Source: Borges-Andra and Siri, 1999.

In the pilot cases as well as other organizations, the impacts reported tended to be somewhat higher in the dimension of organizational motivation than in the dimensions of operational environment, organizational capacity, and performance. For pilot cases, the highest impact scores within the organizational motivation dimension were for indicators related to the clarity of the organization's mission and objectives, recognition of the value of PM&E, and management support for strengthening the PM&E system. Lower impact scores were reported for broader cultural variables, such as the promotion of an evaluation culture. In the capacity dimension, the highest scores were registered for indicators related to the existence of plans for strengthening PM&E,

Exhibit 4.10 Impacts of training at the organizational level: mean scores for selected indicators and averages for all indicators in four dimensions



Notes: Numbers in brackets correspond to the indicators listed in Annex 5. Scale: 0 = no impact, 4 = large impact.

Source: Annex 5.

the availability of skills for responding to external demands, and the organization's capacity to apply principles of strategic management and manage institutional change processes. Intermediate-level scores were reported for the implementation of strategic planning and the use of information provided by the PM&E system for decision making within the organization. In this dimension, the lowest scores were reported for indicators related to the development of management information systems, the integration of PM&E activities, and resources and personnel available for PM&E activities. In the environmental dimension, the highest impact score corresponded to the availability of technical information and methodological support for improving PM&E. The lowest one corresponded to political support for the organization. Within the performance dimension, the highest score was for the degree to which research re-

sponds to users' demands and the lowest impact scores related to the overall productivity and effectiveness of the organization.

Whereas at the level of individuals, there was relatively little difference between impact scores in pilot cases and those from other organizations, at the organizational level large differences were found. For each of the 38 indicators of impact, the average score was higher from the pilot cases than from other organizations; for 26 of the 38 indicators, the difference between average scores of the two groups of organizations is statistically significant.²³ Especially large impacts were reported in pilot cases in the following areas:

- clarity of the organization's mission and objectives (an indicator of motivation)
- recognition of the value of PM&E in the organization (motivation)
- support from program management for PM&E (motivation)
- support from top management for PM&E (motivation)
- promoting a strategic culture in the organization (motivation)
- plans for improving the PM&E system (capacity)
- organizational capacity to manage institutional change (capacity)
- political support for the organization (environment)

Respondents provided 212 examples of impacts at the organizational level, of which 56 related to organizational motivation, 128 to organizational capacity, 16 to organizational performance, and 12 to the organization's operating environment. Exhibit 4.11 presents representative examples.

Most of the examples of impacts on organizational motivation referred to motivation to improve PM&E or to change the organizational culture towards greater emphasis on performance. Impacts on organizational capacity fell into four main groups:

- improvements in PM&E procedures
- development of strategic plans
- expansion of professional capacities in PM&E
- project development

Most examples of impact on organizational performance referred to the responsiveness of research plans or outputs to external demands. Impacts on the environment referred mainly to increased interaction and communication with other organizations or to increased credibility of the organization.

Some may argue that impacts attributed by survey respondents to training were in fact due to other factors, such as facilitation and technical support in the pilot cases. Exhibit 4.12 presents two cases where training and participation in project workshops contributed to organizational change processes in the absence of facilitation.

23. At the 0.5% level.

Exhibit 4.11 Examples of training impacts at the level of the organization

The 144 respondents reported 212 examples of impacts at the level of the organization. There were 56 examples provided in organizational motivation, 128 on organizational capacity, 12 on the external environment, and 16 on organizational performance. Below is a representative selection of examples reported in each of the four dimensions.

Impacts on organizational motivation

- Evaluation is viewed more favorably [than previously]. It is now seen as part of a substantial organizational learning process (Chile).
- A new culture is evolving, one in which the importance and necessity is appreciated of ensuring that the organization has an integrated PM&E system (Colombia).
- [Training has promoted] the development of a strategic planning culture (Dominican Republic).
- [The organization is now aware that] the research agenda must be driven by carefully-researched producer needs as opposed to researcher preferences (Venezuela).
- Increased support on the part of senior management is noticeable, particularly as regards the adoption of an integrated PM&E system in our organization (Cuba).

Impacts on organizational capacity

- Control activities such as monitoring and evaluation are now conducted in a more integrated and organized way, in both research and extension projects (Argentina).
- The enhanced development and implementation of a strategic planning process at the organizational level and also at the level of the research stations (Ecuador).
- A substantial group of professionals in the organization now possess capabilities in strategic planning (Panama).
- Within our region, small working groups have been set up to strengthen understanding and to set the process of establishing PM&E as essential activities (Saint Vincent and the Grenadines).
- A decision was taken to adopt the strategic approach and associated planning activities in drawing up our five-year research plan. Many new PM&E concepts have been absorbed partly as a consequence of those who attended project workshops and learned new ways of thinking about information management (Uruguay).

Impacts on the environmental dimension of the organization

- Strategic linkages established with collaborators and clients which make the institution more viable and relevant (Saint Vincent and the Grenadines).
- From my perspective an important impact has been the improvement of relations between the various organizations within MINAG and with other organizations within different ministries. All of these organizations have been strengthened as a result of the project workshops and the use of PM&E management tools employed within the strategic approach (Cuba).
- In this center, research project planning has been encouraged resulting in increased financial resources and enhanced links with the private sector (Argentina).

Impacts on organizational performance

- The center completed its planning activities for the period 1996–2000 on a more secure foundation than previously. Now we design projects not only on the basis of current demands of the production system but also take into consideration potential future requirements (e.g., the entire agri-food production chain) (Argentina).
- An improved response to external demands, especially those based on collaborative undertakings with the private sector (Mexico).
- Better regional planning based on confirmed user needs and integrating research, testing, and development (Argentina).
- Increased viability of the organization, the extent to which the research agenda is related to user needs, and the capability of the organization to respond to external demands (Cuba).

Source: Borges-Andrade and Siri, 1999.

The impact assessments from workshop participants were compared statistically with those of their supervisors and peers. Results indicate no statistically significant differences between the ratings of participants and those of their supervisors and peers for 93 percent of the impact indicators. In the few cases where statistically significant differences were found, supervisors tended to give higher ratings and peers tended to give lower ratings than participants. Qualitative analysis of the examples of impacts provided by the three groups revealed no significant differences between the types of impact reported.

Exhibit 4.12 Institutional impacts: INIA-Chile and INIA-Uruguay

INIA-Chile

During the 1990s, INIA acknowledged the need for internal change and adopted a professional managerial approach to guide its organizational development. Many external factors contributed to this, including Chile's increasing openness to world trade, national pressure to modernize the public sector, and a reduction in public funding.

INIA's senior management was associated with the PM&E project and contributed to its planning from 1993 onwards. This association coincided with INIA's initial efforts improve its performance. INIA has both contributed to and benefited from PM&E project publications and training. Eleven INIA professionals attended project training events and INIA hosted a sub-regional project workshop in 1996. Two INIA professionals played key roles in the project training team, and all 11 actively disseminated project materials and training methods throughout their organization.

INIA's creative adaptation of concepts, frameworks, and tools made available in the PM&E project publications and training reinforced its strategic approach to management, the creation of an organization-wide system of planning, monitoring, and evaluation, the integration and aggregation of information generated by its evolving PM&E system, and the planning of projects to compete for external sources of funding. INIA's relationship with the PM&E project has been one of mutual contribution and impact reflecting the timely coincidence of their shared commitment to strengthening research management.

INIA-Uruguay

As a recent effort in strengthening research management, INIA-Uruguay engaged in strategic planning, developed a system for managing projects supported by the Agricultural Technology Promotion Fund, developed an annual planning and budgeting system, and undertook evaluations of all research projects carried out during its five years of operations. Improvements in PM&E were motivated by three main factors: demands from producer representatives and external agencies for accountability, the need to manage the Fund effectively, and internal pressures to decentralize decision making to project leaders.

Ten of INIA-Uruguay's managers participated in PM&E project training events. Two became members of the teams which authored project training manuals. INIA hosted a sub-regional training workshop on behalf of the PM&E project in 1993. The evaluation studies indicate that the project contributed to PM&E advances in INIA in several ways:

- Participation in project training workshops stimulated INIA's exploration of PM&E issues and provided concepts and frameworks for their productive discussion.
- Several of the INIA professionals who participated in project activities also played key roles in the development of PM&E in the organization.
- INIA-Uruguay managers adapted concepts, frameworks, and instruments from the training materials to serve their organizational development and management needs.
- At the PM&E project workshops, INIA-Uruguay managers came into contact with counterparts in other organizations facing similar management challenges. This resulted in exchanges that were both broadening and operationally beneficial.

Source: Mackay, Gálvez, and Romano, 1999; Horton and Hareau, 1999.

Expected future impacts

The training survey solicited respondents' views on the likelihood of future impacts of the project. Respondents were asked if they thought the project would have "important impacts in your organization in the future." Where the answer was affirmative, they were asked to describe the expected impacts and indicate when they were likely to occur. Nearly 90 percent of the respondents responded affirmatively. Most impacts were expected in two to three years. An analysis of the qualitative responses indicates that informants expect the number and proportion of impacts on organizational performance to increase over time.

Enhancing results of training

The training survey asked respondents to identify actions the PM&E project could have taken to be of more use to them or to their organization. Sixty-two of the respondents provided 76 specific suggestions. According to these respondents, the project could have enhanced its results by

- developing a more adequate strategy for involving senior managers, to ensure their commitment to change and to improving PM&E
- reducing the range of topics covered in training events and focusing them more on local needs and priorities
- increasing follow-up and direct support to trainees after training events
- extending the time horizon of the project to support organizations embarking on profound organizational change processes

Respondents were also asked to identify actions their organization could take in order to enhance the impact of the project in the coming years. Seventy-nine respondents provided 92 suggestions. Respondents said their organizations could enhance the project's benefits by

- ensuring greater political support and top-management commitment for organizational change
- improving the diagnosis of organizational problems and the planning of organizational change
- taking more concrete actions to implement changes in management (Suggested actions included assigning staff full-time to PM&E activities, expanding training, and providing more adequate resources for PM&E and for organizational change.)
- improving communication with internal and external stakeholders
- broadening participation in organizational change processes

Results of pilot cases' self-assessments

Self-assessment exercises were done in the three pilot cases that were active in 1998: SINCITA in Cuba, IDIAP in Panama, and FONAIAP in Venezuela. These aimed to assess progress to date and draw lessons for improving future work in the pilot case organizations. Report outlines and methods for data collection and analysis were developed in a joint effort by the change teams in the pilot cases, the evaluation team, and the PM&E project team during working meetings lasting two weeks in the case of Cuba and one week each in Panama and Venezuela. The methods used on included a review of documents related to the change process and a three-day assessment workshop in each pilot case. Each pilot case change team organized and facilitated its own self-assessment workshop using a focus-group approach (Morgan and Krueger, 1997) and subsequently prepared a report on the change process.

The self-assessment workshops were organized and facilitated so that members of the organization and external stakeholders could discuss and reach consensus on answers to three questions:

- What were the main results of the organizational change processes to date?
- What were the main strengths, weaknesses, and lessons of the change process?
- What were the main strengths, weaknesses, and lessons of the pilot case organizations' collaboration with the PM&E project?

The change teams in the pilot case organizations decided to focus on changes at the organizational level. In the self-assessment workshops, individual participants were asked to identify the main results of the organizational change process and to note them on cards. Once the individuals had prepared their cards, they were asked to display them to the group organized under four headings corresponding to the four organizational dimensions of the evaluation framework: organizational motivation, capacity, environment, and performance. Once displayed, the changes were analyzed and clusters identified. Similar exercises were done to identify the main strengths and weaknesses of the change processes and of the collaboration with the PM&E project. In each case, lessons were drawn from the strengths and weaknesses.

Many organizations and groups participated in the self-assessment workshops. In Cuba, representatives from more than 19 institutions participated, including research institutes under the jurisdiction of the Ministry of Agriculture and the Ministry of Science, Technology and the Environment, as well as representatives from the National Association of Small Producers and the National Agency of Science, Technology and the Environment. The Panama workshop included representatives from all experiment stations and IDIAP headquarters, as well as the National University of Panama (faculty of natural sciences), the Agrarian Bank, the National Marketing Institute for Agricultural Products, and the Ministry of Agriculture. In Venezuela, the assessment workshop involved FONAIAP managers and staff as well as representatives of the National University, the Ministry of Agriculture, FONAIAP's board, and IICA.

The pilot case organizations did their individual self-assessments and prepared country reports in mid and late 1998. In March 1999, representatives of the three pilot cases met in Venezuela with members of the evaluation team to synthesize the results of the individual studies and draw general conclusions and lessons. The summary of results that follows is based on the report of that meeting (Aued et al., 1999).

Results of organizational change processes

In the synthesis, 25 major results were identified: five corresponding to the dimension of organizational motivation, 11 to organizational capacity, seven to the operating environment and two to organizational performance (Exhibit 4.13).

Among the impacts reported in the motivational dimension was that management became more committed to institutional change and gained greater respect for the skills and abilities of staff. Staff became more motivated and committed to the institution. Successful management of the organizational change processes reduced feelings of helplessness and uncertainty previously experienced by many staff. Changes were also beginning to emerge in the organizational culture towards greater participation, transparency, and performance orientation.

The largest number of changes was reported in the dimension of organizational capacity. Each of the organizations had enhanced its knowledge and skills in the areas of PM&E and management of organizational change. Each had developed strategic plans and initiated the development of integrated PM&E sys-

Exhibit 4.13 Main changes identified in the pilot case organizations

Participants in the self-assessment exercises identified 25 major changes in organizational motivation, capacity, environment, and performance.

Changes in organizational motivation

- Management began to place greater value on the skills and abilities of staff
- Greater commitment of management to institutional change
- Increased motivation of staff and greater commitment to the organization
- Reduced uncertainty, resulting from a demonstrated ability to deal with external pressures and to manage change
- Initiation of changes in organizational culture

Changes in organizational capacity

- Greater knowledge of and skills in PM&E
- Development of strategic plans
- Progress in development of integrated PM&E systems
- Progress in shifting the institutional focus from research, narrowly defined, to research and development
- Improved project management
- Expanded access to funding via competitive projects
- More extensive and improved relations with other organizations
- Development of capacity to manage organizational change processes
- Expanded teamwork within the organization
- Enhanced relevance of research activities
- Strengthening of institutional units responsible for PM&E

Changes in the operating environment

- Greater participation of external stakeholders in the organization's change process
- Greater participation of producers in the research and development activities of the organization
- Greater demands from public and private entities for information and training in PM&E and management of organizational change
- Greater exchange of information and experience on PM&E and organizational change among organizations in the region
- Greater support from government for the organizational change process

Changes in organizational performance

- More efficient use of resources
- Greater use of existing information and technology in diffusion and extension programs

Source: Aued et al., 1999.

tems. Within the organizations, there was a perceptible shift in focus from research per se towards research and development (R&D) activities. This was reflected in a greater relevance of research to needs and opportunities in the productive sector, improved project formulation and management, and increased awards of competitive funding for projects. Additional changes in capacity included improved teamwork in the pilot case organizations and broadened and improved relations among these organizations and with their stakeholders and clients.

In the environmental dimension, stakeholders and clients became more favorably disposed to the pilot case organizations, largely as a result of their involvement in the change processes and in the R&D activities of the organization. Moreover, the pilot cases were establishing a reputation for expertise in strategic planning and management of change. This was reflected in requests from other organizations for support in strategic planning. Some increases were observed in government support for the organizational change processes. At the regional level, there was increased exchange of information on PM&E and on the management of organizational change.

The self-assessment exercises indicated that improvements in motivation and capacity led to improved efficiency in resource use and to greater dissemination of “on the shelf” technologies to the productive sector. An expanded flow of relevant technologies was expected, thus leading to impacts on productivity as well as resource conservation. But more time was needed for these effects to materialize and become observable.

Lessons related to the ISNAR project

In their self-assessments, each pilot case drew lessons from the change process and from collaboration with the ISNAR project. Consolidated lists of lessons were developed during the synthesis exercise (Exhibit 4.14).

Concerning the organizational change processes, the importance of political and technical leadership was emphasized, as was the need to establish a technical body responsible for managing change. The pilot case organizations also emphasized the need to establish basic principles and operating procedures and to develop an overall plan for change at the start of the process. Broad participatory teamwork and continuous communication were identified as crucial ingredients of fundamental organizational change. The need to manage the

Exhibit 4.14 Lessons drawn from the pilot cases' self-assessments

Participants in the self-assessment exercises identified the following lessons from the change processes and from the collaboration with ISNAR.

Lessons from the change process in general

- Political and technical leadership are both indispensable for a successful process of institutional change.
- At the outset of a change process, it is essential to establish guiding principles and operating procedures and to develop an overall plan for the process.
- A technical body should be established that is responsible for managing the organizational change process. Ideally, the members serve on a full-time basis.
- Broad participation and teamwork are vital for planning and implementing successful organizational change processes.
- Continuous communication on the change process, its goals, methods, and progress is essential to maintain commitment of staff and key external stakeholders.
- The rhythm of change needs to be carefully managed, to avoid excessive pressures on one hand and a loss of momentum on the other.
- Implementation of agreed changes is essential to maintain credibility.
- Capacity to monitor and respond adequately to changes in the environment needs to be developed, in order to ensure institutional sustainability.

Lessons from collaboration with the ISNAR project

- An external agency that wishes to support organizational change should do so via a collaborative agreement in which the guiding principles, concepts, and methods for achieving change are negotiated with the organization.
- External facilitators require political and interpersonal skills as well as technical expertise.
- Participation of organizational members in the development of training materials is essential to ensure their appropriateness and acceptability.
- An experiential training approach motivates participants and contributes to the development of essential problem-identification and problem-solving abilities.
- External agencies should avoid highly individualized relations, and should provide open access to information and support via such participatory mechanisms as workshops.
- Participating in a regional capacity development project, such as the PM&E project, is advantageous to local organizations since it allows the exchange of information, expertise, and experiences among organizations dealing with similar issues.

Source: Aued et al., 1999.

pace of change was noted, as was the need to implement agreements and develop capacity to continually monitor and respond adequately to changes in the environment.

Concerning collaboration with the ISNAR project, the pilot cases highlighted the value of a collaborative agreement that includes negotiated principles, concepts, and methods for change. They also emphasized the need for external facilitators to have political and interpersonal skills as well as technical ones, as processes of institutional change and collaboration often generate resistance and conflicts beyond technical rationality. Their conclusion was that capacity development programs should employ participatory approaches and experiential training in all aspects of work. They warned external agencies against developing highly personalized relations and encouraged open access to information and support. The pilot cases also underscored the value of participating in a regional capacity development program that allowed each organization to learn and receive support from others dealing with similar issues.

Results of the study on PM&E in the region

For the study on the dynamics of PM&E in the region, changes in PM&E were examined in nine organizational case studies. In 1998, authors of the case studies interviewed nearly 250 individuals, reviewed organizational documents, and visited numerous field sites in eight countries. Data collection, analysis, and reporting were guided by a “case study instrument” that covered five major topics, 35 sub-topics, and 127 specific items on PM&E.

In some cases, one-on-one interviews were conducted with managers and staff members. In other cases the instrument was filled in directly by individuals following an explanation of the concepts and questions. In a few cases, focus groups were organized in which informants reached consensus on a response to each item and a single result was reported for the group.

The case study instrument was designed to capture quantitative and qualitative information on the state of PM&E in 1992 and 1997, on the effects of changes in PM&E on organizations’ performance, and on the contribution of the ISNAR project to changes in PM&E that had taken place.

During field visits lasting from five to ten days, managers and project leaders were requested to score the level of use of 52 specific PM&E tools, methods, techniques, and processes in 1992 and 1997. The scale ranged from 0 (“not used”) to 3 (“used routinely”). Informants also scored four indicators of professional capacity in PM&E and two indicators of the use of PM&E information, using a similar 4-point scale. Informants were asked to provide explanations and illustrations of changes that occurred over the study period. They were also asked to indicate if and how the changes in PM&E had affected the organization’s performance, and if and how the ISNAR project had contributed to the changes reported.

In their reports, case study leaders presented summaries of the results and compared them with the original case studies carried out in 1992 (Novoa and Horton, 1994).

Changes in PM&E

In the cases studied, planning improved in several ways between 1992 and 1997. For example, during this period there was widespread adoption of strategic planning. Only two of 11 cases studied in 1992 had prepared strategic plans. But in 1997 all the organizations had prepared, or were preparing, some type of strategic plan. The nature and quality of the planning processes and outputs, however, varied widely from case to case. In the context of strategic planning, many organizations were attempting to identify and respond more effectively to the demands of producers and other stakeholder groups. In 1992, many organizations had already prepared operational plans at the institute and project levels. This practice spread, and by 1997 operational planning was the most thoroughly institutionalized PM&E practice in the organizations studied (exhibits 4.15, 4.16, and 4.17).

Between 1992 and 1997, fewer improvements were reported in monitoring than in planning or evaluation. However, monitoring encompasses many different types of supervisory and reporting activities and improvements were made in some of these. Many organizations developed computerized databases and information systems for project budgeting and management. These enabled managers and project leaders to keep better track of financial and other resources. Information technology facilitated the administrative decentralization and expansion of contract research that had begun in the 1980s. In contrast, there was little change in traditional monitoring practices such as field visits, program reviews, and progress reporting. Consequently, financial and administrative monitoring tended to be improved relative to programmatic monitoring.

**Exhibit 4.15 Indicators of PM&E capacity, 1992 and 1997
(average scores for informants in nine case studies)**

	PM&E activities ¹								Professional capacity ² (4)		Use of information ² (2)	
	Planning (7)		Monitoring (12)		Evaluation (9)		Integration (7)					
	92	97	92	97	92	97	92	97	92	97	92	97
INIA, Chile	0.8	2.0	1.6	1.8	0.6	1.1	0.6	1.7	0.4	1.7	0.5	1.6
INIFAP, Mexico	1.6	2.3	1.7	2.1	1.2	1.7	1.3	1.9	1.3	1.8	1.4	1.9
ICTA, Guatemala	1.6	2.1	1.9	2.0	1.0	1.3	1.1	1.4	1.1	1.7	1.3	1.9
CONITTA, C.Rica	1.3	2.2	1.4	2.0	1.2	1.7	1.0	1.9	0.9	2.0	0.9	2.0
CARDI, Caribbean	1.3	2.1	1.5	2.0	1.0	1.5	0.9	1.6	1.0	1.5	0.6	1.0
CENICAFE, Colombia	2.3	2.7	2.2	2.5	1.6	1.9	1.8	2.3	1.5	2.1	1.9	2.4
CORPOICA, Colombia	1.0	1.9	1.1	1.9	0.6	1.2	0.5	1.4	0.4	1.4	0.4	1.4
CIAT, Bolivia	1.5	2.5	1.8	1.9	0.5	0.8	1.0	1.8	0.8	1.8	0.9	1.6
INIA, Uruguay	1.1	2.7	1.0	1.4	0.3	0.4	0.3	1.6	0.8	2.1	0.3	2.0

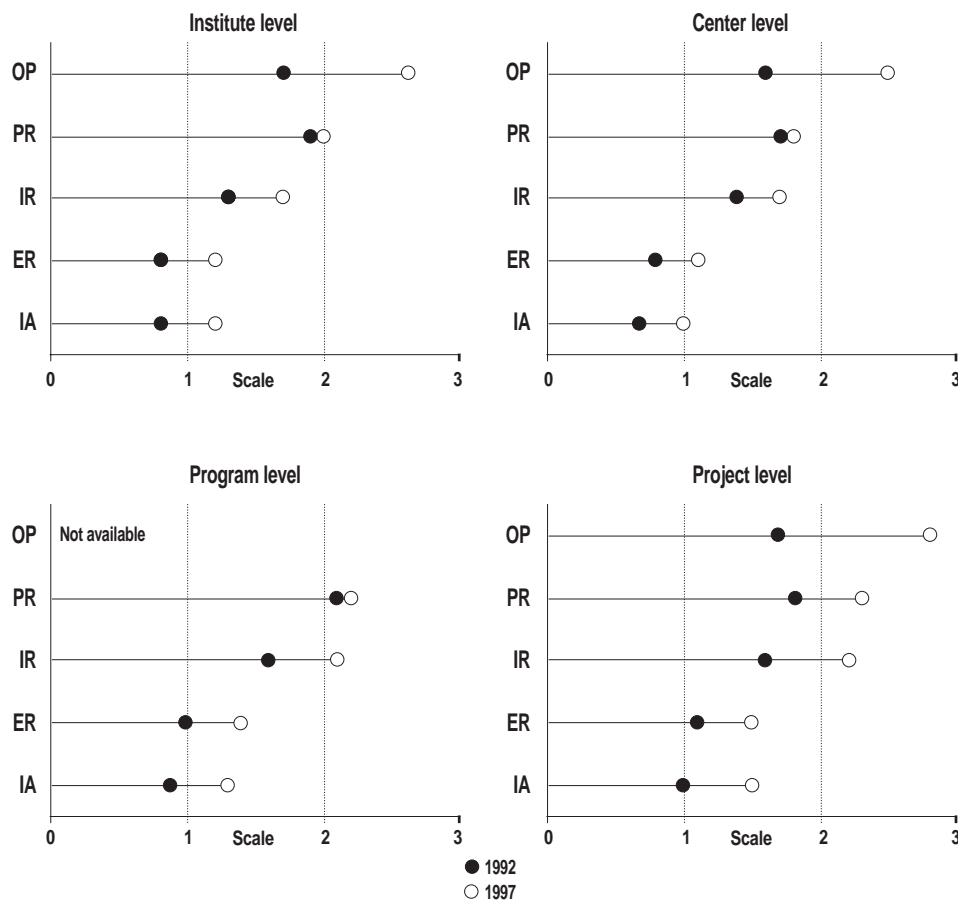
¹Scale: 0 = Not used or not done; 1 = Used or done on a trial basis; 2 = Used or done with a degree of regularity; 3 = Used or done on a routine basis.

²Scale: 0 = No capacity/use; 1 = Limited capacity/use; 2 = Moderate capacity/use; 3 = Adequate capacity/use.

Note: Numbers in parenthesis indicate the number of indicators for which the average score is presented.

Source: Horton and Novoa, 1999.

Exhibit 4.16 Use of selected PM&E methods at institute, center, program, and project levels, 1992 and 1997 (average scores for nine case studies)



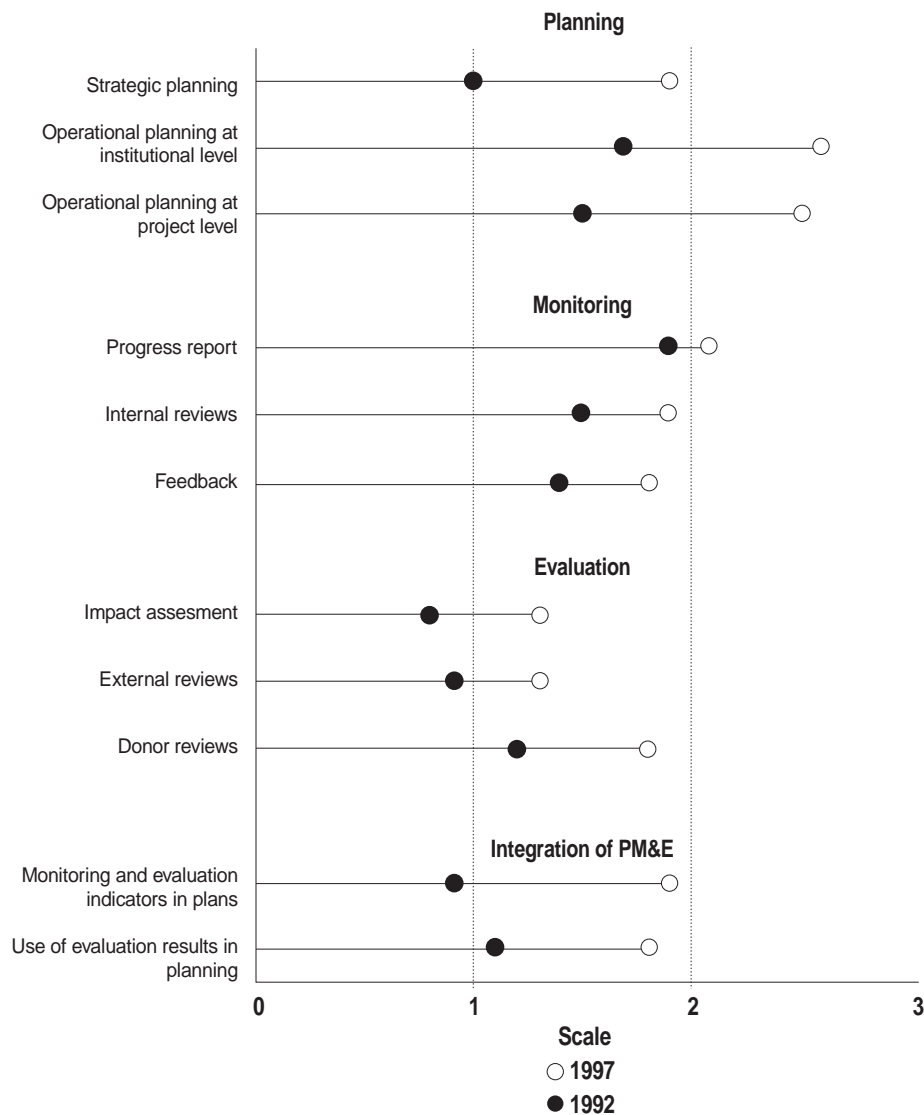
Note: OP = Operational planning; PR = Program reporting; IR = Internal review; ER = External review; IA = Impact assessment
 Scale: 0 = Not used or not done; 1 = Used or done on a trial basis; 2 = Used or done with a degree of regularity; 3 = Used or done on a routine basis.

Source: Horton and Novoa, 1999.

In 1997, evaluation continued to be less well institutionalized than either planning or monitoring. From 1992 to 1997, more organizations commissioned impact studies, external reviews, and evaluations than in the previous five years. Nevertheless, these evaluation techniques were less frequently employed than planning or monitoring techniques. On balance, most evaluations were still carried out at the request of external funders; few organizations had systematic internal evaluation procedures.

One salient finding of the 1992 case studies was that PM&E tasks tended to be done in isolation of one another, rather than as components of an articulated PM&E system. The 1997 case studies indicated substantial improvements in the integration of PM&E. Although evaluation remained weaker than the other phases of the management cycle, progress was made in linking the PM&E activities that were carried out. In many organizations, such integration was facilitated by the adoption of the project as the basic unit for managing research. Expanded use of information technology also facilitated the integration of PM&E, particularly at the project level. The studies indicate that more im-

**Exhibit 4.17 Use of selected PM&E methods, 1992 and 1997
(average scores for nine case studies)**



Scale: 0 = Not used or not done; 1 = Used or done on a trial basis; 2 = Used or done with a degree of regularity; and 3 = Used or done on a routine basis.

Source: Horton and Novoa, 1999.

provements were made in PM&E at the level of the research project than at other decision-making levels.

Contributions of PM&E to organizational performance

The case studies showed improving quality of the information generated by PM&E activities, and more extensive use of such information in management decision making. Strategic planning exercises had involved numerous external stakeholders as well as staff and this broad involvement had facilitated the use of planning results. Moreover, newly developed management information systems (MIS) had increased the availability of systematic information on resources for specific projects and programs.

Despite these improvements, however, use of PM&E information to improve programs did not keep pace with information production. Information from PM&E was mainly used for administration and accounting purposes, not for upgrading programs. This was partly due to pressures on researchers and managers to cut costs and improve efficiency. It also reflects the difficulty of processing and synthesizing qualitative data and presenting results in a format useful for decision makers. Many decision makers continue to prefer traditional sources of information and do not exploit information made available through PM&E exercises.

The following paragraphs show how changes in PM&E did influence research management and performance in the organizations studied.

Effects on the relevance of research activities. There are many cases where changes in PM&E influenced research priorities and the research agenda. During a recent strategic planning exercise, INIA-Uruguay decided to reduce or terminate research on goats and pastures and to increase work on milk and meat quality. At INIA-Chile, a 1995 evaluation of research activities led *La Platina* research station to establish new priorities, resulting in their shifting funds among projects and upgrading laboratory and library facilities. The introduction of competitive project funding provided research managers in many organizations with a new instrument with which to implement research priorities through the allocation of funds to specific research activities.

Effects on efficiency. In several organizations, the introduction of project budgeting and computer-assisted project management contributed to the efficiency of operations and resource use by allowing the decentralization of budget control to project leaders.

Effects on research effectiveness. Improvements in PM&E helped to focus the use of resources on fewer, high-priority research projects. The sharpened focus of research, coupled with greater efficiency, was expected to increase the number of successful projects and shorten the time required for research to generate usable results. However, more time is needed for recent changes in PM&E to work their way through research systems to influence research outputs and impacts. In some cases, expanded use of the available stock of information and technologies in diffusion and extension activities was observed.

Effects on access to funding. Competitive funding schemes are expanding and one frequently observed benefit of improved PM&E was a larger number of well-formulated projects that attracted funding from competitive sources. This is not to say that improved PM&E led to expanded funding. But it did allow researchers and their organizations to access the sources of competitive funding available.

Contributions of the ISNAR project to changes in PM&E

The ISNAR project was only one of many sources of change in PM&E. In fact, among the various sources of change it was a rather small contributor in most of the organizations studied. The main forces driving change in PM&E were the public-sector reform strategies promoted in recent years by the Interna-

tional Monetary Fund (IMF), the World Bank, other multilateral and bilateral development organizations, and the national governments themselves.

In the context of external pressures for organizational change, the main contributions of the PM&E project were to help agricultural research managers understand the broad institutional changes taking place. It also helped them develop strategies for responding to change appropriately. Five specific contributions were documented in the case studies:

- Project participants gained understanding of the dynamic institutional context, the need for fundamental organizational change, and strategies for managing change.
- Participants learned about and gained appreciation for strategic management.
- Participants acquired knowledge of PM&E and appreciation for its use in management and organizational learning.
- Participating organizations began to pay more attention to PM&E processes.
- Participating organizations improved their relations with other organizations, both nationally and regionally.

The extent of the project's contributions depended in part on the intensity of its interactions with specific organizations. The intensity of interactions was greatest in Chile, Costa Rica, and Uruguay. Project contributions also depended on the degree to which institutional development processes were underway locally. Exhibit 4.18 identifies some specific cases of project contributions.

Results of the study of agricultural research leaders

The final study, a survey of agricultural research leaders in the region, sought additional informed views on the project's impacts. A simple survey form was sent to 173 research leaders who had been involved in one or more of the project activities. It asked them to list any impacts of the project that they had observed. Responses were received from 37 individuals in national agricultural research organizations and 14 individuals in regional or international organizations. About half the respondents from national organizations were from the pilot case countries; the other half were from 14 other organizations in the region. The responses were transcribed into an electronic file and analyzed with the aid of the NUD.IST²⁴ qualitative analysis software package.

The 51 survey respondents provided 259 responses, which served as units of analysis in this study. Approximately 75 percent of the responses referred to impacts of the PM&E project; the other 25 percent concerned mainly constraints to the project's impact. The responses referring to impacts were coded and sorted according to eight categories in the evaluation framework: motivation, capacity, environment, and performance at the levels of the individual and the organization. About 87 percent of the responses referred to impacts at

24. NUD.IST stands for "Non-numeric, Unstructured Data Indexing, Sorting and Theory-building."

Exhibit 4.18 Contributions of the PM&E project in specific cases

CIAT, Bolivia. Two CIAT staff members participated in the project's first sub-regional training workshop in Uruguay in 1993. Since that time, there has been virtually no contact between CIAT and the project. Nevertheless, one of the two individuals trained became head of planning at CIAT, and he employed concepts from the project's training materials to implement a strategic planning process. In his words, "The project's contributions have been small but its impact has been large."

CONNITA, Costa Rica. Two professionals in the Ministry of Agriculture participated in the first regional workshop for training trainers and one in the second workshop. Seven Costa Ricans participated in sub-regional workshops. In 1995, the ministry proposed that CONITTA serve as one of the four pilot cases of the project. A series of activities began to develop a strategic plan for CONITTA, but due to numerous personnel changes within the ministry, and political opposition in some quarters to the planning and change process, activities ceased in 1997.

CORPOICA, Colombia. One CORPOICA staff member in the planning unit participated in the second regional workshop for training trainers in 1996. Five staff members participated in regional planning or review workshops or sub-regional training workshops. No top-level managers participated in project events. The above-mentioned staff member in CORPOICA's planning unit has been active and persistent in introducing strategic management concepts into CORPOICA's management system, and one regional director used concepts learned from project training materials to prepare a strategic plan for his center. As in INIFAP, the project's impacts have been limited because of the low intensity of interaction between the project and the organization and the high degree of administrative decentralization, which makes it difficult to implement uniform management procedures throughout the organization.

INIA, Chile. In 1993, a professional working in extension participated in the project's first regional workshop for preparing training materials and training trainers. This was a three-week event held at CIAT, in Cali, Colombia. In 1994 and 1995, top-level managers participated in regional workshops where project activities were planned and outputs reviewed. In 1996, another staff member participated in the second regional workshop to prepare training materials and train trainers (four weeks). Between 1993 and 1996, 12 INIA staff members participated in week-long sub-regional training events. Based in part on motivation and orientation provided by the project, INIA established the Division of Studies and Planning, and the professional trained in 1993 became the director of this new unit. Since then, INIA has engaged in strategic planning and has aggressively worked to improve its operational planning, project management, and information systems.

INIA, Uruguay. Two INIA staff members participated in the May 1993 workshop for training trainers and preparing training materials – the head of the planning department and a young economist who had recently joined INIA. Later on, 14 other staff members participated in sub-regional training events. The economist assumed leadership for a newly established "project unit" and in 1996–1997 he facilitated a strategic planning exercise in INIA.

INIFAP, Mexico. In 1993, a professional working in planning in INIFAP's livestock division also participated in the Cali workshop. Upon returning to INIFAP, he applied the participatory training approach learned in Cali to prepare a project-management manual and to train a group of trainers. This professional and others who participated in PM&E project activities introduced new management approaches into their work. However, the overall impact of the project in INIA has been limited by the small number of professionals who interacted with the project in relation to the size of INIFAP's staff. The high degree of administrative decentralization in INIFAP has also limited systematic changes in management practice.

Source: Horton and Novoa, 1999.

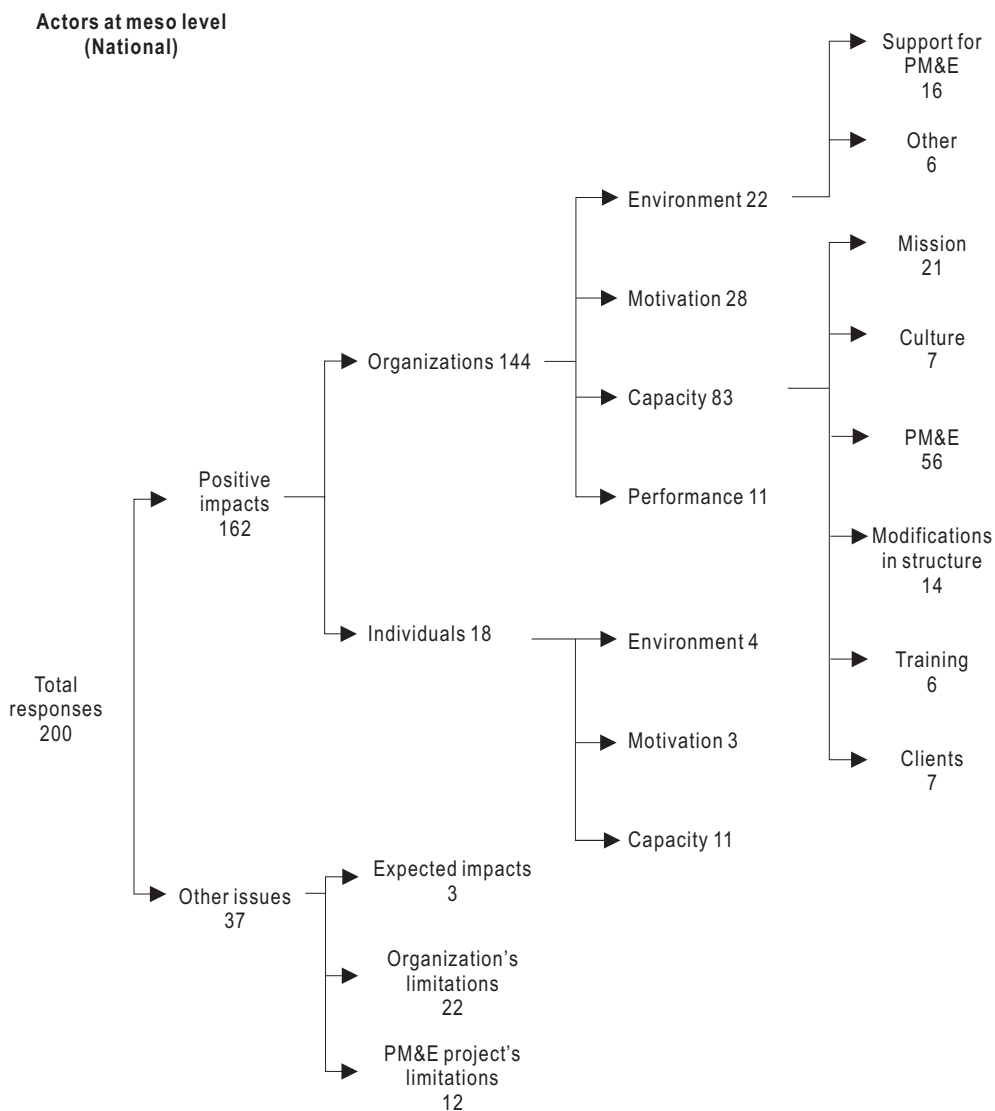
the organizational level, with only 13 percent mentioning impacts at the individual level. The pattern of responses provided by individuals from regional organizations was similar to that of responses from national organizations. Views of national agricultural research leaders concerning the impacts of the project on their organizations are summarized briefly here.

Nearly 60 percent of the impacts reported related to organizational capacity, 20 percent related to organizational motivation, 15 percent to organizational environment, and only five percent to organizational performance. Concerning the environment, agricultural research leaders felt that project publications and training made valuable contributions to the information available on agricultural research management. The participatory manner in which the publications were developed and their applicability in the agricultural research organizations in the region were mentioned favorably. Impacts on organizational motivation were mainly concerned with the clarification of organiza-

tions' mission statements and objectives. In the dimension of organizational capacity, more than half the responses referred to expanded knowledge and application of PM&E techniques. Other responses in this dimension related to the application of strategic management principles and to monitoring or evaluation; about 10 percent mentioned the establishment of integrated PM&E systems in their organizations (Exhibit 4.19).

Agricultural research leaders identified a number of constraints to the project's impact. These fall into two groups: those related to conditions in national organizations (two-thirds of responses) and those related to limitations of the PM&E project (one-third). Limited distribution of project publications and lack of coordination with regional organizations were the main project constraints mentioned. Regarding constraints to impact at the level of national organizations, those mentioned related mainly to political instability, downsizing of the public sector, and scarcity of resources for carrying out fundamental organizational change.

Exhibit 4.19 Agricultural research leaders: classification of responses



Source: Dupleich and Horton, 1999.

5. Conclusions and Lessons

In line with the objectives of this evaluation and drawing on the results reported in chapters 3 and 4, the present chapter presents general results in relation to the four evaluation questions:

- What were the main contributions of the PM&E project to agricultural research management in national agricultural research systems (NARS)?
- How were the project's contributions brought about?
- What lessons can be learned to improve the design and management of future capacity development programs?
- What lessons can be learned to improve future evaluations of capacity development programs?

Contributions of the PM&E project to agricultural research management

Contributions to individuals' motivation, capacity, and performance

The evaluation studies indicate that the project contributed to the knowledge and ability of many individuals to plan, monitor, and evaluate agricultural research. The project's publications provided useful information on PM&E. Training activities provided opportunities to exchange information, share experiences, and experiment with and refine new management approaches and techniques.

The project's most significant effects at the individual level were in the realm of motivation to improve planning and accountability. Managers became more aware of the need for organizational change and improvement. In the early 1990s, when the ISNAR project was getting under way, few managers in the region anticipated the magnitude of the challenges their organizations would experience in the coming years. Most thought the problems they were experiencing, starting mainly with budgetary restrictions, were transitory or could be solved by reducing costs. Many believed that calls for improved governance and accountability would pass with time. They hoped to weather the storm by improving public awareness and cutting costs rather than by making fundamental changes in their organization's goals, strategies, or modes of operation. Exposure to the PM&E project led many of these professionals to view organizational change in a positive and constructive light and to become active implementers of organizational change efforts.

Managers also gained appreciation for the specific advantages that PM&E can bring them and the organizations for which they are responsible. The project encouraged managers to view mounting pressures for change as signals that their organizations needed to fundamentally reconsider goals, strategies, and operations, or else have changes imposed on them from outside.

The project argued that a sustainable organization requires the capacity to identify and respond appropriately to threats and opportunities in an increasingly turbulent environment. An integrated PM&E system was viewed as es-

essential for (a) monitoring external trends and identifying needs and opportunities, (b) defining relevant goals, (c) developing appropriate strategies, (d) aligning activities of staff members with organizational goals and strategies, and (e) continuously improving upon strategies, activities, and outputs by learning from experience. The evaluation studies indicate that many managers who participated in workshops, training events, and pilot case activities assimilated new concepts and tools and are making use of them in their management practices. Exposure to the project led many to see the potential of PM&E as a set of invaluable management tools. They were motivated to improve their PM&E activities and their management practices more broadly.

Managers improved their knowledge and skills in PM&E. Virtually all the evaluation studies identified contributions made by project publications and training to knowledge and skills in PM&E and in strategic management. The training study, pilot case self-assessments, and the survey of agricultural research leaders provide evidence of enhanced professional capacity for appreciating and managing organizational change, particularly in the pilot case organizations. The experiences documented in the studies also indicate that enhanced technical capacity for PM&E is of little value in the absence of a broader capacity for strategic management and managing organizational change.

Many of those who participated in project activities improved some aspect of their management. Most changes in PM&E were made at the level of those research activities and projects managed directly by individuals who participated in the project. Fewer changes were made at the research program level or at higher levels, where organization-wide decisions were required for the implementation of change.

In addition to contributing to individuals' management skills and abilities, the project contributed to the capacity of many individuals to provide management training for other professionals, in their own and other organizations. Evidence was provided by the information and training studies, the pilot case self-assessments, and the survey of agricultural research leaders. Strengthened management training capacity in the region is a valuable resource that organizations continue to tap in order to upgrade the management skills and practices of their personnel. This capacity is also being employed by universities in the region to broaden the training of future generations of managers.

Contributions to organizational motivation, capacity, and performance

While the project's contributions to individual motivation, capacity, and performance were shown to be strong, significant organization-wide improvements in PM&E were registered in just a few cases. Most organizational improvement occurred where certain conditions were met:²⁵

25. The findings reported here are consistent with those reported in studies of organizational change in other settings, including educational organizations and large corporations. Refer to Fullan, 1991; Harvard Business School, 1998; Hobbs, 1999; Hoy and Miskel, 1996; Huberman and Miles, 1984; and Mohrman et al., 1989.

- The environment was conducive to change (e.g., there were strong external pressures for change).
- Top managers provided leadership for change.
- A critical mass of staff was involved in the change process and committed to it.
- Appropriate institutional innovations were made available or developed.
- Resources were provided for change (e.g., dedicated time of key staff and budgets for training and facilitation).
- There was adequate management of the change process.

Two key factors appear to have constrained the effects of the PM&E project in many organizations: lack of support of senior managers for large-scale organizational change and the relatively small proportion of staff who participated in project activities.

Where fundamental change did occur, senior management of the organization took on the lead with the project playing a catalytic, supporting role. The project contributed to fundamental organizational change in three of the four pilot cases – SINCITA in Cuba, IDIAP in Panama, and FONAIAP in Venezuela – and in a few other organizations, principally INIA-Uruguay and INIA-Chile. In these cases, the project contributed to increased organizational effectiveness by motivating key managers and providing concepts, information, training, and tools for improving management. In the pilot cases, the project facilitated the change processes by backstopping local change teams. It also encouraged participating organizations to dedicate essential resources to the change process.

The greatest organizational improvement occurred in planning. There was considerable interest in strategic planning in the region, and many organizations undertook strategic planning exercises. The project provided concepts, tools, guidance, and support for strategic planning in the pilot cases. Publications and training supported strategic planning exercises in other organizations as well, most notably in INIA-Uruguay, INIA-Chile, and in INIFAP-Mexico. As Chapter 4 noted, a number of other organizations also used project concepts and tools in strategic planning.

Improvements were also made in operational planning for research centers and projects. There were some improvements in monitoring, particularly as project-management systems were established. By comparison, fewer advances were made in evaluation. Evaluation practice continues to be the weakest link in the management cycle.

Recent years have seen a pronounced move towards the organization of research activities around “projects.” In its training, publications, and facilitation, the PM&E project highlighted the importance of the research project as the basic unit of research management and offered principles and tools for improving project formulation and management. The evaluation studies indicate that in many organizations the PM&E project contributed more to management at the project level than at decision-making levels higher in the organizational hierarchy. This finding is consistent with the strong incentives for management improvement at the project level. It also reflects individuals’ abil-

ity to introduce their own improvements at the project level, where they have a greater measure of hands-on control. At higher decision-making levels, leadership and coordination must be provided by top management – factors beyond middle managers' control.

Upon project completion, integrated PM&E systems were envisioned to be operating in at least four organizations in the region. Such systems were expected to integrate PM&E activities, use standardized PM&E instruments and procedures, and have adequate personnel and resources to perform the assigned functions. With guidance, and in a few cases support, from the project, several organizations took actions to strengthen and integrate their PM&E. These efforts were most vigorous and thorough in the pilot cases. In 1998, SINCITA-Cuba, FONAIAP-Venezuela, and IDIAP-Panama designed new PM&E systems and SINCITA and FONAIAP prepared operating manuals for their new systems. Other organizations improved some aspects of their PM&E systems, but to date with results that fall short of complete integration.

It is important to note that the PM&E project did not cause the reported changes. At best, it made significant contributions. In recent years, the region's agricultural research organizations have been under considerable pressure to improve their planning and accountability mechanisms. The information, training, and support provided by the PM&E project therefore often responded to felt needs and so fell on fertile ground. In cases where a high level of commitment was sustained to improve management, the project supported change by contributing to a sense of strategic purpose and pointing the direction for effective change.

How were contributions brought about?

The project employed three main strategies, each with different combinations of reach and intensity of interaction. The information strategy had the broadest reach and the lowest intensity; the training strategy had intermediate levels of reach and intensity; and the pilot case strategy had the smallest reach and the highest intensity of interaction. Evaluation results showed the intensity of interaction to be positively associated with the project's contributions to capacity development at both the individual and organizational levels.

Use of information

Project publications were distributed widely both within the region and elsewhere. Many individuals found these publications to be directly useful in their work. They especially valued the training manuals on strategic planning and strategic management. The mere acquisition of a publication from the PM&E project, however, seldom stimulated lasting changes in behavior. Significant changes did occur where individuals were actively searching for information of the nature contained in project publications and, once found, were actively committed to putting it to use. In Cuba, for example, MINAG officials used information in the training manuals to initiate an organizational change process in 1995. An IICA official incorporated material from the manuals into procedures for strategic planning, which were later used in several universities in the region. Notwithstanding these exceptional cases, information unaccompa-

Agricultural education and training support needs to include measures which build the capacity of organizations to provide leadership and a supportive environment for innovation and introduction of new skills. This will include the management of change (Wallace and Nilsson, 1997: 1).

nied by complementary forms of intervention seldom led to significant capacity development, particularly at the organizational level.

Results of training

The project offered direct training in PM&E to some 200 managers. Two month-long regional workshops were organized to train trainers and prepare the project's training materials. Six week-long training events were organized later to train middle-level managers in PM&E concepts and tools. The evaluation results indicate that training can play an important role within a comprehensive strategy for capacity development. However, training alone is an insufficiently robust tool for bringing about extensive organizational change. To express this idea in terms of the evaluation framework, "training can motivate individuals and contribute to their capacity, but unless the working environment is conducive to change, little organizational improvement should be expected."

Most improvements in PM&E require large-scale organizational changes that cannot be made by individuals working in isolation. Hence, training alone should not be expected to bring about significant changes in PM&E.

Changes in the pilot cases

The project's contributions were greatest in the pilot case organizations, where there was strong top-level commitment to change and interaction between managers and the project team were more intense than in other cases. Information and training were provided in the framework of an institutional commitment to improving organizational effectiveness. In early 1996, ISNAR and the pilot case organizations signed letters of agreement to work together to strengthen PM&E. On the basis of these agreements, the project worked with and supported the pilot cases in carrying out diagnostic studies, in strategic planning, and in designing and implementing new PM&E systems. This joint work took place from 1996 to 1999.

The commitment to change and the higher intensity of interaction produced much greater organizational change in the pilot cases than in other organizations. The training study showed that the project had much larger impacts on the motivation of individuals and on their working environments in the pilot cases than in other organizations. These differential impacts at the individual level were associated with much larger differences at the organizational level. Reported impacts on most of the indicators of organizational motivation, capacity, environment, and performance were significantly higher in pilot cases than in other organizations. These findings, based on surveys of project participants (studies 2 and 3), were corroborated by surveys of supervisors and peers (Study 3). They were also supported by the results of the pilot case self-assessments (Study 4).

The pilot cases became the centerpiece of the project's work in the region. They served as testing sites for PM&E concepts and methods. They also provided practical experiences for enriching the project's training offerings. In this way, the pilot cases became a source of dynamism and renewal for the project.

Results of the participatory approach

As noted, the project consistently used highly participatory approaches to planning, implementing, reviewing, and evaluating its activities. Over several years, a core group of individuals was involved in a series of activities, including workshops lasting from one week to more than a month. These individuals planned project activities, studied PM&E in their own or other organizations, prepared project publications, played key roles in regional workshops and training events, facilitated change processes in the pilot cases, and participated in numerous reviews and evaluations of project-related work. Most project work was conducted by groups of individuals, and over time a strong team spirit developed among the participants. Through teamwork, individuals not only enhanced their knowledge, skills, and abilities but became more highly motivated to improve – and more capable of improving – their own management practices and their training work in PM&E.

The evaluation studies indicate that those individuals who participated most frequently and intensively in the project experienced the greatest changes in their motivation, capacity, and performance. The group of PM&E specialists that worked with the project over time became a resource for improving PM&E not only in their own organizations, but more widely in their countries and in the region. ISNAR has mobilized these specialists on several occasions for training and technical missions in other countries. Group members have also been employed directly by other organizations, in their own country and abroad, to support other capacity development efforts in PM&E.

Limitations of the project's strategies

The evaluation studies identified a number of limitations of the project's strategies. Some of these relate to the project itself; others concern the circumstances of agricultural research organizations in the region.

One limitation was the rather generic nature of project training. Since the project had a regional scope, its training materials were designed for a regional audience and training events catered to regional or sub-regional audiences. Participants felt that training would have been more useful if it had been tailored to the specific needs of their organizations.

A second limitation was the limited interaction between the project team and agricultural research managers in the region. Most managers came into contact with the project in short-term training activities, after which there was little follow-up. Significant capacity development at the organizational level requires more extensive training and direct support over a longer term.

A third limitation was the short duration of work in the pilot cases. Originally scheduled for two years' duration, support for the pilot cases was later extended for a third year, but with a reduced budget. Experiences in the pilot cases suggest that strategic planning and institutionalization of integrated PM&E systems takes a minimum of five years.

A fourth limitation was the pilot case organizations' restricted access to external expertise. The project strategy was to assign one professional to serve as the "external focal point" for each pilot case. Given the complexity of the or-

The country, not assistance agencies, should own its development strategy, determining the goals, timing, and sequencing of its development programs (World Bank, 1999: 21).

ganizational change processes, they would have benefited from access to a broader array of skills and experiences than could be provided by a single individual.

A final limitation of the project strategy, particularly in phase 1, was the dispersion of activities and resources over a number of organizations, many of which were not committed to making substantial changes in their management practices. Focusing project resources on organizations committed to change might have led to greater impacts at the organizational level.

Lessons for designing and managing capacity development programs

The evaluation studies generated a great deal of information related to the adequacy of the ISNAR project's strategies and results. This information was analyzed by the evaluation team in conjunction with the project team and agricultural research managers in Latin America in a number of workshops.²⁶ The following general lessons were identified as potentially valuable for improving the design and management of capacity development programs. Hopefully, these lessons can be applied and their wisdom tested in future programs.

Intended beneficiaries should play central roles in designing and managing capacity development efforts

Capacity development programs are often designed and implemented by external development agencies. The results are often disappointing. The capacity built up tends to be inappropriate, underutilized, or unsustainable. The PM&E project illustrates both the value and the feasibility of involving intended beneficiaries in all phases of program design, implementation, and evaluation. Participation of managers from the region contributed to the relevance of activities, products, and services. It also enhanced local ownership of the project and its results. This contributed to the use of results and the sustainability of capacity development efforts initiated by the project.

Capacity development programs should articulate and test their underlying theories and assumptions

A weakness of phase 1 of the PM&E project was the lack of an explicit theory of action to guide actions toward short- and long-term goals. At the beginning of phase 2, a logical framework was developed, but the underlying assumptions linking the project activities to a chain of expected outcomes remained rather vague. This hampered both management of the project and its subsequent evaluation.

26. Refer to the workshop reports Andersen et al., 1997; Andersen et al., 1998; Andersen et al., 1999; Aued et al., 1999; and Horton et al., 1998.

Where projects are innovative, it is crucial to have objective and rigorous evaluation of outcomes and dissemination of new information. Knowledge about what works in service provision – and what does not – is one of the most important outputs of development assistance (World Bank, 1998: 5).

Capacity development is still more a process of social experimentation than of social engineering. Many programs are overly ambitious and have vague goals, weak designs, and unrealistic assumptions. By articulating and testing the theories and assumptions underlying programs, program designers and managers could greatly facilitate learning from experience. Such learning is essential for improving the design and management of future programs.

Capacity development programs should focus their attention on organizations that are committed to change

As in many regional projects, the original approach of the PM&E project was to provide information and training for organizations throughout the region. However, only a few of the region's agricultural research organizations proved seriously committed to improving their management practices. Since top-level commitment and leadership are essential for large-scale organizational change, it would have been more effective to concentrate the project's training resources on organizations that were committed to change and to have tailored project training to these organizations' needs and circumstances.

Capacity development programs need to go beyond providing inputs to facilitating change processes

International programs operating under the banner of capacity development often focus on the provision of physical, financial, or human resources or on providing new information or tools. Experience in the PM&E project indicates that the key to capacity development is not the provision of information or other resources but the use of such inputs to solve problems and actually change organizational procedures. Problem-solving capacities can best be built through experiential learning rather than by transfer of resources or tools.

Capacity development programs need to work simultaneously on many fronts

A number of critical success factors are associated with fundamental organizational change:

- top-management commitment to change
- support from key external stakeholders
- a critical mass of support within the organization
- appropriate institutional innovations
- resources for implementing change
- astute management of the organizational change process

Successful change efforts require multiple-level interventions and should have a problem-solving thrust (Hage and Finsterbusch, 1987: 248).

Many capacity development programs fail because they focus on a single success factor while other complementary factors are ignored. Experience in the PM&E project highlights the need to work simultaneously on both technical and political factors at different organizational levels – ranging from top managers and key external stakeholders who must lead, endorse, and support change, to operational staff members who must design and implement new management systems.

Capacity development programs should adapt themselves to the needs and circumstances of the organizations they support, not vice versa

Capacity development is often viewed from the perspective of an external intervention – a project or program with defined objectives, resources, and deadlines. The objectives and schedules of external agencies are often confused with those of the organizations to be strengthened. If project funding is available for two or three years, it is assumed that needed organizational changes can be made in this period. Essentially, the pace and direction of an organization's capacity development processes are expected to adapt to the needs of an externally motivated intervention. This is unrealistic. As shown in the PM&E project's pilot cases, the pace and direction of organizational changes are influenced by a multitude of internal factors, many of which may overshadow an externally funded project.

Effective capacity development interventions may support change processes, but they cannot lead them. Hence, they should be designed on the basis of realistic assessments of time and resources needed to bring about desired changes. To the extent possible, they should have built-in flexibility to adapt to the ever-changing circumstances of partner organizations.

Integrating PM&E is crucial for promoting individual and organizational learning and improvement

Planning, monitoring, and evaluating are often viewed as discrete management or control functions in organizations (Hatch, 1997; Kroenke, 1989). Because they represent only a fraction of the essential capacities of an organization, it is frequently assumed that capacity development programs should address a much wider range of issues (Hoadley and Moscardi, 1998; Jackson and Kassam, 1997). However, the experience of the PM&E project – both in the training events and in the pilot cases – confirmed the value of systematic PM&E in the development of individual and organizational capacities and performance.

In the project's training events, an experiential learning cycle was employed that included stages for planning and preparation, implementation of group work, monitoring of progress, and evaluation of results. In this way, the substance of the training (PM&E) was integrated with the form (the learning cycle). In the pilot cases, pursuit of the general goal of developing an integrated PM&E system led to many far-reaching organizational innovations, including strategic planning and development of project management systems.

As Senge (1994) and others note, planning activities, checking progress, evaluating results, and periodic reflection on the entire cycle of activities are vital for promoting organizational learning and continuous improvement of internal processes and performance. Systematic PM&E is especially important for capacity development. Since there are no blueprints for capacity development, and each organization must learn from its own experiences, strengthening PM&E is of critical importance for learning and improving efforts over time.²⁸

Putting people first in development projects comes down to tailoring the design and implementation of projects to the needs and capabilities of people who are supposed to benefit from them (Uphoff, 1991: 467).

28. Horton (1999: 157–160) and the references cited therein discuss the role of systematic PM&E in action learning, organizational learning, and quality management and enhancement.

The learning organization in rural development should be more evaluative, adopt a holistic perspective, be managed strategically, and be close to the rural society it serves (Shepherd, 1998: 14).

Change tactics in the learning process and performance-improvement approaches should be combined (Hage and Finsterbusch, 1987: 252).

Lessons for the evaluation of capacity development programs

The following general lessons were identified for improving the evaluation of capacity development programs:

Evaluation of a capacity development program needs to draw on three types of theory: a theory of the program, a theory of performance, and a theory of change

In evaluation, as in other fields of inquiry and practice, there is a strong tendency to routinely employ traditional frameworks and methods. However, meaningful and useful evaluations require that frameworks and methods be selected for each case depending on specific needs and opportunities (Patton, 1997). For the present study, an evaluation framework was developed on the basis of the PM&E project's theory of action and the Universalia-IDRC model of organizational performance. During the course of the evaluation, the importance of a third type of theory became evident: a theory of organizational change. Experience in this evaluation therefore indicates that future evaluations of capacity development programs should draw on three types of theory:

- the theory of action of the program being evaluated
- a theory of performance (individual, organizational, or institutional performance depending on the program being evaluated)
- a theory of change (again, individual, organizational, or institutional change depending on the case)

Since evaluation of capacity development programs is a relatively new field of study, considerable work is needed to clarify key concepts and terms within an established disciplinary field, concepts and definitions are shared and well understood. This is the case, for example, in economic evaluation of crop-breeding programs. However, in a new transdisciplinary field of study, such as the evaluation of capacity development, there is considerable controversy and confusion over concepts and terms. For example, during the evaluation reported on here, there was repeated confusion about the meaning of terms such as "impact," "organization," "institution," "capacity," and "performance." For this reason, key concepts and terms were defined in Chapter 2 of this report. Clear concepts and their consistent use are essential for the accumulation and advancement of knowledge in this relatively young field of evaluation.

The impact metaphor should be avoided in evaluating capacity development

In the present era of declining aid budgets, development programs are under heavy pressure to demonstrate their impacts. Hence, it is not surprising that this study set out to assess the impacts of the PM&E project on participating organizations. However, various limitations of the impact metaphor became apparent during the evaluation. One problem is that impact means quite different things to different people. At one extreme, impacts may be viewed as any effects of a project or program. At the other extreme, impacts may be viewed as intended, lasting, long-term, large-scale effects at the aggregate level of society, the economy, or the environment.

A second problem is that impact is a “ballistic” metaphor, implying a linear cause-and-effect relationship between a presumed source of impact and a target population or area. The impact metaphor fails to capture the essential features of capacity development, which is a process of change and growth that occurs within individuals and organizations. The term “impact assessment” also carries heavy methodological baggage implying quantitative measurement of effects employing experimental research methods.

Beyond these conceptual and methodological issues, the impact metaphor is offensive to those supposedly “impacted” – often termed the “target population.” Staff of organizations are often interested in learning how to improve capacity development efforts. They may also be interested in understanding the role of external agents and how to improve the use of external inputs and support. However, they generally find it inappropriate when evaluators seek to determine the impacts of an external collaborator on them and on their organizations. Individuals and organizations correctly view capacity development first and foremost as the fruit of their own efforts – possibly with external support.

Challenged with reporting the results of public programs, Mayne (1999) outlined an approach for documenting, understanding, and reporting on the contributions of a program to the achievement of desired results. What he terms “contribution analysis” employs a rigorous and logical sequence of methodological steps not unlike those reported in this study. By using the term “contribution,” and by following a sound set of methodological strategies, one can avoid some of the conceptual, semantic, and political traps often encountered when the term “impact assessment” is used.

General concepts need to be carefully translated into locally meaningful terms, and vice versa

For concepts to serve as effective guides for data collection and analysis, they need to be translated into locally meaningful terms. The translation process exists even when a single researcher or evaluator gathers all the data from a single organization. Where several evaluators are involved in data collection in several organizations and countries, translation becomes especially problematic. Preparing standard survey forms to be used in several countries is especially challenging, as such terms as “organization,” “program,” “project,” and “performance” may have quite different meanings in different places. Involving members of the organizations to be studied in designing the survey can help overcome terminological problems. Instruments also need to be carefully pretested and revised based on users’ suggestions. In our studies, we budgeted far too little time and resources for pretesting and revision of survey instruments.

Qualitative data gathered through surveys or other means also needs to be translated into general concepts and terms that permit comparison and synthesis across cases. Organizational members can play valuable roles in this translation process and in the validation and interpretation of results.

No longer should people be identified as ‘target groups’. Rather, if we must speak of them abstractly, we should consider them as ‘intended beneficiaries’. They are to be benefited, rather than impacted (Uphoff, 1991: 467).

Participation of organizational members and stakeholders is essential in the evaluation of a capacity development program

Staff and stakeholders possess understandings of complex organizational realities that external evaluators need to tap. Organizational members and the project team were involved at various points in the design and implementation of the evaluation studies and the interpretation of their results. The degree of stakeholder involvement was much greater in some studies than in others. For example, it was much greater in the pilot case self-assessments than in the information and training surveys. Stakeholder involvement was found to improve the study design and enrich the interpretation of findings. Participation also stimulated interest in the evaluation and enhanced stakeholders' understanding and acceptance of the results.

Triangulation is especially important in evaluating organizational capacity development

Use of triangulation, or multiple methods, is generally recommended in program evaluation. However, evaluation practice falls short of the theory. The evaluation reported on here employed different investigators to collect and analyze different types of data from several different sources. An attempt was made to look at the same general phenomenon (project results) from different perspectives and to triangulate the findings. Some of the studies employed a rich mix of methods. For example, the case studies of change in PM&E involved structured and unstructured interviews as well as observations and reviews of documents. In contrast, the information and training studies relied heavily on a single method: the postal survey.

When results of the various studies were written up and synthesized, it became clear that triangulation should have been built more systematically into each of the component studies. For example, the information and training surveys should have been complemented with field visits, observations, and in-depth interviews in selected organizations. This would have enriched the findings and enhanced the reliability of the conclusions. As far as possible, triangulation should be built into each and every evaluation study. Results of organizational studies are often challenged because they rely heavily on perceptual data, which is considered to be subjective or even biased. Given this challenge, in organizational assessments it is particularly important to use multiple information sources, including not only perceptual data but also organizational records and direct observations accompanied by rigorous protocols for data collection and analysis.

Evaluation of a capacity development program should be designed and managed so as to contribute to the capacity development process

Given the fragility of capacity development processes, evaluations must be designed not only to provide evaluative information for external stakeholders, but also to support the capacity development effort. Capacity development processes are fragile. An evaluation can support capacity development, by contributing to motivation and learning. An evaluation can undermine capacity development, for example, by making politically sensitive information available to groups that oppose change. When evaluating a capacity develop-

ment program, evaluators should be concerned not only with the feasibility and accuracy of their methods, but also with the propriety with which sensitive information is handled and the results used.²⁹

In the present evaluation exercise, those responsible for the pilot cases were initially skeptical of the evaluation. They were concerned that an external evaluation would be disruptive and could result in political problems within their respective organizations. Later, when a self-assessment approach was developed, they gradually began to show interest. Ultimately, they took a large measure of responsibility for conducting the assessments and reporting their results. In these cases, the evaluation supported the capacity development process because those who conducted the evaluation were also responsible for managing the capacity development process; they used the results to improve their work.

Looking to the future

In conclusion, capacity development – and efforts made to document and evaluate such efforts – is a complex undertaking involving experience, technical expertise, and interdisciplinary skills whose range and interaction are by no means fully understood. Inevitably, some of the feeling of exploration and groping towards an increased understanding comes across in this evaluation. There is no shortcut to immediate enlightenment on these matters. This evaluation report has tried to convey a sense of the challenges and difficulties facing those who undertake and evaluate capacity development efforts, while attempting to report credibly on the results of one such effort. The evaluation effort reported on here spanned three years. It is with a profound sense of appreciation for the distance covered and that yet to be traveled by the field of evaluation that the authors submit this report.

The calls for participatory evaluation recognize that local people, traditionally thought of as targets of development efforts, need instead to be co-participants in designing, implementing, and indeed, evaluating these same projects and programs. The emphasis here is on empowering local people to more actively participate in efforts to shape their future (Rist, 1995: 168–172).

The underlying rationale for mixed-method inquiry is to understand more fully, to generate deeper and broader insights, to develop important knowledge claims that respect a wider range of interests and perspectives (Greene and Caracelli, 1997: 7)

The process of engaging in evaluation can have as much or more impact than the findings generated. ...Acquisition of evaluation skills and ways of thinking can have a longer-term impact than the use of findings from a particular evaluation study (Patton, 1997: 99 and 97)..

29. The four criteria of utility, feasibility, propriety, and accuracy form the core standards for program evaluation (Joint Committee on Standards for Educational Evaluation, 1994).

Epilogue

by Josette Murphy³¹

This research report is one of many outputs of ISNAR's work in the evaluation of capacity development. It sets itself two objectives: to document the impact of a specific ISNAR capacity-building project and to derive from this experience lessons for capacity development and evaluation. These objectives were pursued and achieved through a critical review of the project design and implementation (Chapter 3), presentation of the project impacts (Chapter 4), and a discussion of lessons for capacity building in agricultural research (Chapter 5). Were it limited to these chapters alone, the report would make a useful contribution to the participating agencies and to readers involved in monitoring and evaluation programs.

But the report goes beyond that. It addresses the participatory philosophy that underpins the PM&E project and places both the project and its evaluation in the broader context of organizational capacity building as part of international development (Chapter 1). It provides clear definitions for the key terms used in the study and presents the theoretical and conceptual frameworks employed to design the evaluation (Chapter 2). In addition to conclusions about the design of capacity-building projects it also offers lessons of importance for the evaluation of their impacts (Chapter 5). By so extending the scope of the report, the authors bring together several levels of analysis which are rarely so explicitly linked. As a result, the authors go beyond the findings of this particular evaluation and present evidence and reflections on experience relevant to current debates on organizational change and evaluation theory. This report will be of interest to a broad range of development practitioners because it touches on numerous issues of topical interest.

Understanding organizational change through evaluation

The novel characteristics of the object of the evaluation: the PM&E project

The project evaluated focused on a set of issues that is particularly relevant in these days of constrained funding. With the broad goal of improving the capacity and performance of agricultural research organizations in Latin America and the Caribbean, the project aimed in particular to strengthen their managerial capabilities to perform planning, monitoring, and evaluating functions. These are functions that might arguably be called the weakest links (PM&E) in the weakest dimension (management) of agricultural research. Achievement of this objective was posited on the expectation that by improving the capacity of individual research managers the capacity of the PM&E

31. The author, Josette Murphy, was an evaluation specialist at the World Bank from 1985 to 1998. Major assignments included advising agencies in Africa on strengthening their monitoring and evaluation capacity, evaluating agricultural projects and programs, and evaluating the performance of the World Bank in incorporating gender issues in its policies and lending. Previously, she worked at ISNAR, USAID, and Purdue University.

units in their organizations would be strengthened and so would provide more and more relevant information, leading to more timely and appropriate decision making by research managers. As a result, the organization as a whole would become more effective.

Beyond the unusually broad regional scope of the project, there is nothing particularly out of the ordinary about this objective. Yet the development literature is full of failed efforts to improve planning or monitoring and evaluation (M&E) in public agencies. How did ISNAR's PM&E project differ from earlier efforts? Two characteristics made it novel:

- The conceptual frameworks developed for the project and then refined for its evaluation were comprehensive, explicit, and well integrated.
- The full participation of individual researchers and managers in all collaborating organizations was a core value diligently practiced throughout the project and its evaluation, and the evaluation study reported here documents the PM&E project and its activities with unusual thoroughness, describing the diversity of methods employed to evaluate the project's impact and the kinds of analyses used to organize the quantitative and qualitative data collected.

Integrated frameworks to promote and measure organizational change

As often happens, the object of the evaluation in this report, ISNAR's PM&E project, was originally designed with a clearly articulated set of objectives, but without an explicit theory of action. An explicit theory of action in the form of a logframe was built into the second phase of the project and comfortably linked it to the project's original philosophy, objectives, and assumptions about how it was expected to bring about the desired results. This early omission may have been ultimately beneficial: it enabled ISNAR and project staff to draw from the early implementation experience and the evaluation results of the first phase as they were developing the logical framework for the second phase and also later as they developed the conceptual frameworks to guide the evaluation. The latter, that is, the evaluation frameworks, may be the most innovative contribution of this report along with the description of how they were derived.

This experience of integrating the project's theory of action with the conceptual frameworks used to guide the evaluation provides a good example of how the creation of an evaluation framework is a powerful tool for critical reflection on the planning and design phases of a project or program. Using hindsight, it also argues for the wisdom of designing the project and its evaluation simultaneously.

One of the conceptual frameworks employed by this evaluation study, the one extending the IDRC and Universalia Management Group model for institutional and organizational assessment, makes explicit the layers of complexity that an impact evaluation of organizational capacity building must explore:³²

32. See Lusthaus, Anderson, and Murphy (1995) for a fuller discussion of the original framework.

- It links individual motivation, skills, capacity, and performance to the environment in which individual staff and their organizations must operate.
- It shows how the improved performance of PM&E units contributes indirectly to the overall relevance and effectiveness of research results by providing the research organizations with timely, relevant information.
- It clarifies the nature of and role played by the operating environment in which all research units must operate.

The evaluation reported on here begins with a complex yet essential question: “What is being evaluated?” That is, “What evidence should we seek to prove that objectives have or have not been achieved?” This question rarely has a simple answer, and the question is particularly difficult when dealing with individual and organizational capacity development objectives.

The analytical framework adopted responded to this difficulty by representing the organization (at the individual level and as an entity) as made up of four dimensions which can be expected to change in measurable ways: the operating environment, motivation, capacity, and performance. Changes in the last of these dimensions – individual or organizational performance – are considered to be a function of changes in the first three. The first three are the organizational dimensions that the PM&E project components – information, training, and facilitation of change – sought to strengthen.

But the best of intentions, and the best of designs, often fail because of factors external to capacity-building projects. Throughout the design of this project and that of its evaluation, ISNAR and the participating agencies were well aware of the crucial role played by the operating environment. What features of the environment really matter when designing a capacity-building project? The operational environment of the organizations participating in the PM&E project are the economic, technical, socio-cultural, institutional, legal, and political factors and the stakeholder groups that influence behavior and performance. The PM&E project itself is also part of the operating environment of the organizations and makes its contribution alongside other competing or complementary factors. Issues related to the operating environment are discussed in more detail in the next section, on the current debate surrounding the new institutional economics.

One point not made explicitly in the frameworks may contribute to an understanding of the evaluation findings: for individual managers and for their agencies as functional units, the factors contributing to dimensions of motivation, skills, capacity, and their resulting outcome (performance) are determined by access to information and knowledge. Indeed, what is motivation if not a choice to act because the action is expected to bring some benefit or reward?³³ What are capacity and skills if not the ability to perform certain functions through the use of available knowledge and information? Performance then is the outcome of the utilization of knowledge.

33. Or, in a negative scenario, because of the knowledge that deciding not to act will bring some punishment.

Thus organizational change is in essence about changes in the generation, sharing, understanding, and utilization of information. The organizational changes that the PM&E project tried to promote hinged on broadening access to relevant information for researchers and managers. Viewed in this light, information is a commodity that can be controlled, accumulated, shared, or traded as can any commodity. Utilization of knowledge depends on the formal and informal rules that govern the act of use, and it is subject to transaction costs. This is perhaps the most constant thread throughout the report: an agency's capacity to plan, monitor, and evaluate is influenced by the rules – formal and informal – that govern access to and control, diffusion, and utilization of information.

Participatory approaches and evaluation methods

The usefulness and validity of an evaluation depend very much on the methods used to select sources and collect and interpret data and evidence to address the questions that require answers. In recent years, evaluation practitioners have agreed on some key elements of good evaluation: participation of stakeholders, use of both quantitative and qualitative data, triangulation, historical comparison, and counterfactual arguments, to mention a few. This evaluation report justly highlights a core value of the PM&E project and of the conduct of the evaluation itself: the full participation of staff and managers in the partner agencies. Through meetings, actions, and workshops, these agencies were fully involved, first in project decisions and later in the design, implementation, and interpretation of its evaluation. While a participatory approach to evaluation is time consuming, it is crucial to the very capacity building that the project intended to promote.

This evaluation report is the result of the use of multiple methods adopted collaboratively by the evaluation team and project participants. It includes the results of self-assessments by project participants, various types of interviews, comparisons over time, case studies, surveys, and phone interviews. Both quantitative and qualitative data were collected and analyzed (Chapter 4). The current debate among evaluators calls for a judicious balance between the practice of external evaluation, internal self-evaluation, and more participatory approaches in which the ultimate beneficiaries are evaluation partners. While there are risks associated with heavy reliance on self-assessments, in the study reported here the self-evaluation data was used to complement data obtained from other sources by other evaluators and using other means. Furthermore, the self-evaluation exercise undertaken as part of this study can be seen as integral to capacity building. Thus the project evaluation itself contributes to and extends the achievement of the project objectives.

All this makes for an evaluation more complex than a simple before-after comparison. The fact that all categories of factors and actors are identified and included in the evaluation ensures that it goes beyond a simple longitudinal study. It brings in the context (formal and informal rules of the game and how they are used) which is at the heart of institutional and organizational analysis.

This evaluation study does not provide a counterfactual (an impossibility in many projects). Moreover a comparison with countries in which the project was not active would have been of dubious use as a counterfactual, since these countries would have not remained static over the years.

How efforts to evaluate the PM&E project contribute to the broader debates on the new institutional economics and evaluation of organizational change

Here it is worth pulling back from the PM&E project to look at on-going debates on the new institutional economics (NIE), on public management, and on evaluations of organizational change. Given its scope, conceptual framework, and methods, the evaluation of ISNAR's PM&E project reported here both illustrates and can be illuminated by these debates. The debate on NIE is particularly relevant because its principles coincide with the operating environment dimension of the evaluation framework.

Coase, one of the leading proponents of NIE, defined NIE by its focus on microeconomics, its integration of transaction costs in economic analysis, and generally its attention to the complex legal, social, technical, and other factors that influence choices made by individual firms – the term used by economists to refer to organizations (Coase, 1998).³⁴ The NIE approach, which by definition is multidisciplinary, helps to unbundle the operating environment dimension used in the evaluation framework in several ways:

- It differentiates between institutions – the rules of the game – and organizations – sets of actors who play as a group with a common objective. The PM&E project worked with organizations (research agencies) which themselves are subject to institutions such as civil service regulations.
- It identifies numerous factors that should be integrated into microanalysis, and these coincide with those listed under “environment” in the PM&E evaluation framework.
- It distinguishes between formal and informal rules and recognizes that how the rules are applied is a critical matter.

On the issues of formal versus informal rules, a recent study of Latin American and Caribbean countries' performance in the public sector – a sector and geographic area similar to that of the PM&E project – may help us interpret the evaluation findings. Burki and Perry (1998: 2, 128) in a review of institutional change in Latin America and Caribbean countries conclude that public agencies in the region respond primarily to informal networks rather than to formal rules. Since public organizations are hierarchies with formal sets of rules and regulations, the preeminence of informal networks shows that any evaluation of agency performance will need to explore both the formal and informal mechanisms related to information and enforcement. Furthermore, the review, citing several case studies, identifies trust as a necessary element for economic

34. A roundtable discussion on NIE at the 1998 annual meeting of the American Economic Association provides a good starting point on the NIE debate. Four papers, including that of Coase cited here, are included in the May 1998 issue of the *Journal of the American Economic Association*.

growth in an environment led by informal rules (Burki and Perry, 1998: 17, citing La Porta et al., 1997; Knach and Keefer, 1997).

Indeed, the PM&E project framework gives much attention to the environment in which the project took place. The evaluation framework addresses the evaluation tasks outlined above. Specifically it recognizes that rules within the research organizations – rules on PM&E, on incentive systems for staff, on budget allocations across research topics, but also rules on information as a commodity – would combine with rules in the broader environment to determine the outcomes of the PM&E project: organizational performance. By making the agencies' actions more transparent, the PM&E project was also expected to reinforce trust among actors, but again, formal and informal "trust channels" were likely to coexist and thus should be evaluated.

Evaluation as capacity building

At the roundtable on NIE discussed above, Greif (1998) emphasized that historical and comparative institutional economics provides the methodological cornerstone from which NIE can be understood. Indeed, to evaluate any kind of change, one must compare events: how institutions are reflected in concrete actions and how these actions change over time or across settings. But evaluators have long known that a simple comparison of the rules of the game is not sufficient to ascertain that institutional or organizational changes have taken place. It is how the formal and informal rules are applied that makes a difference in people's lives. Recent debates on the evaluation of institutional and organizational development, while informed by the NIE debate, show that the evaluative stance goes beyond Greif's comparisons. This is illustrated by a 1998 World Bank publication on evaluation (Picciotto and Weisner, 1998). Several of the papers and comments in this compendium illuminate the strengths and weaknesses of this evaluation study.

In introducing the volume, Weisner shows how the NIE and evaluators can gain by working together, since both have concluded that "institutions [and organizations] matter" (Picciotto and Weisner, 1998: xi.). NIE calls for more microanalyses in real cases, and says that evaluative methods will be needed to obtain and understand the information required for such microanalyses. In that perspective, the PM&E project and its evaluation are extremely relevant, because both the project and its evaluation are based on the premise that evaluation capacity will strengthen management capacity and enhanced management capacity will result in improved organizational performance. In fact, evaluation itself has the "capacity to act as an effective incentive to change behaviors and policy outcomes" (Picciotto and Weisner, 1998: xiii). One would also expect the evaluation itself to strengthen evaluation capacity, thus reinforcing the project activities, while also evaluating it. While the report touches on this only briefly, it seems likely that the evaluation process itself reinforced the agencies and individual staff's capacity in PM&E, and thus contributed to the project objectives. Implementation and evaluation became two elements of the same overall process. This is in line with current thinking in NIE and in evaluation, since "evaluation is part of the framework of rules and regulations within which public sectors operate" (Picciotto and Weisner, 1998: 317).

Indeed, by seeking to identify formal and informal rules, to trace causality between actions and reactions, and to determine what would have happened without these actions, the evaluative stance goes to the heart of NIE. It calls for evaluators to

- identify relevant categories of factors and actors, and so go beyond longitudinal, bringing in the very context (formal and informal rules of the game and how they are used) which is at the heart of institutional versus organizational analysis;
- devise complex assumptions of causal relationships and types of framework (hierarchy, cooperation, competition);
- go beyond the formal institutional rules to identify the very real yet informal mechanisms which may take precedence over formal rules in determining what actions will be taken; and
- compare the actions being evaluated with those in some type of counterfactual situation – or a proxy thereof – as well as attempt an explanatory analysis of causality.

The evaluation presented in this research report addresses the first two tasks and it provides useful perspectives on the third. As happens so often with impact evaluation, a reasonable counterfactual was not available. The fact that the evaluation was conducted, and that it was conducted systematically and well, makes a contribution to our understanding of capacity building.

The evaluation also raises interesting questions. For example, by making information more systematically available, can a project like the PM&E effort described in this report level the playing field as regards access to information, at least for individuals within the organization? If so, does this change the power structure from hierarchy towards cooperation? Does it reinforce trust? Does it move the agencies from an informal towards a more formal – in the sense of transparent – organization?

Conclusions

Organizational performance in national agricultural research organizations has lagged behind technological capacity. Moreover, it has been difficult to measure, as recent attempts to identify performance indicators in the CGIAR (TAC Secretariat, 1998) and the World Bank (Mosse and Sontheimer, 1996) illustrate. The evaluation findings presented in this report will be useful for the participating agencies and for ISNAR. By providing an unusually well-documented story of how information dissemination, training, and facilitation of change helped improve organizational capacity, it will be of interest to other national agricultural research organizations as well as to evaluation practitioners.

But the report also contributes to broader debates on organizational change and the evaluation of capacity development. In retrospect, many decisions reported as having been made over the years since the project was first conceived (Chapter 3) converged to make this impact evaluation more useful, and this creates its own wisdom. The project focused on a limited objective: to improve

the participating agencies' capacity to plan, monitor, and evaluate their research programs and activities. But the design of its evaluation exhibits a strong understanding of the broader environments (political, managerial, technical, and social) in which these agencies functioned.

- The first and the second (to a greater extent) phases of the PM&E project were designed employing a coherent process from diagnosis to implementation.
- The evaluation was prepared around a framework that matched the project design (and this made it worthwhile to develop a fuller theory of project action even though the project was already under way).
- The entire undertaking, from initial project design to the final interpretation of evaluation findings, was approached in a participatory manner with the collaboration of managers in the participating agencies, ISNAR staff, project staff, and technical experts all working in partnership.

Of course, there are risks in pulling together so many threads into one story. The complexity that makes the story worth retelling cannot be represented in a simple linear way. As a result, while making a logical presentation in just five chapters, this research report also must move back and forth between the PM&E project, its evaluation, the respective frameworks of each, their environments, the evaluation findings, and finally conclude with the lessons drawn from the experience of both the project and its evaluation. But this is a small price to pay for such a substantive contribution. ISNAR and the national organizations involved in the PM&E project should be commended for carrying on this well documented and thoughtful effort. By publishing this research report, ISNAR has made a useful contribution to the debates on organizational change, on institutional economics, and on the role of evaluations in capacity for development efforts.

Annex 1. Evaluation reports

This Research Report is based on the following evaluation reports, copies of which are available upon request from ISNAR.

- Andersen, A. 1999. Response rates to training and information questionnaires. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Aued, J., F. Becerra, M. D. Escobar, A. León, A. Maestrey, and M. A. Mato. 1999. Gestión estratégica del cambio institucional: Resultados del auto-análisis en tres Casos Piloto. Study No. 5 in the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Borges-Andrade, J. and C. Siri. 1999. Impacts of the PM&E Project's training. Study No. 4 in the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Cheaz, J., J. de Souza Silva, A. Andersen, and D. Horton. 1999. Introduction to the PM&E Project: Objectives, strategies, activities and outputs. Study No. 1 in the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Dupleich, L. and D. Horton. 1999. Percepción de líderes de la investigación agrícola acerca de los impactos del Proyecto PS&E. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Gijbers, G., F. Hoyos, and O. Lema. 1999. CIAT-Bolivia: Cambios en planificación, seguimiento y evaluación en la administración de la investigación agropecuaria. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Horton, D. and G. Hareau. 1999. INIA-Uruguay: Cambios en planificación, seguimiento y evaluación en la administración de la investigación agropecuaria. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Horton, D. and A. R. Novoa. 1999. Dynamics of planning, monitoring and evaluation in Latin America and the Caribbean. Study No. 2 in the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Mackay, R., S. Gálvez, and L. Romano. 1999. INIA-Chile: Cambios en planificación, seguimiento y evaluación en la administración de la investigación agropecuaria. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Novoa, A. R. 1999. CONITTA-Costa Rica: Cambios en planificación, seguimiento y evaluación en la administración de la investigación agropecuaria. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Novoa, A. R. 1999. ICTA-Guatemala: Cambios en planificación, seguimiento y evaluación en la administración de la investigación agropecuaria. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Novoa, A. R. 1999. INIFAP-México: Cambios en planificación, seguimiento y evaluación en la administración de la investigación agropecuaria. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Novoa, A. R. and D. Horton. 1999. Dinámica de la PS&E de la investigación agropecuaria en América Latina y el Caribe: Un informe sobre nueve estudios de caso. Study No. 2 in the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research.
- Siri, C. and J. Borges-Andrade. 1999. Impacts of the PM&E Project's publications. Study No. 3 in the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Weber, E. 1999. CARDI-The Caribbean: Changes in planning, monitoring and evaluation in the management of agricultural research. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Weber, E. 1999. CENICAFE-Colombia: Changes in planning, monitoring and evaluation in the management of agricultural research. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).
- Weber, E. 1999. CORPOICA-Colombia: Changes in planning, monitoring and evaluation in the management of agricultural research. Part of the series, Evaluation of capacity development in agricultural research management. The Hague: International Service for National Agricultural Research (ISNAR).

Annex 2. Workshops organized by the PM&E project

Workshop	Date	Represented countries	Days	Number of trainers/facilitators ¹	Number of trained participants ²	Topics ³	Cost per day ⁴
Planning and review workshops			26	4	150		
Planning the project	June 1992	11	3		26	1	500
Reviewing case studies	October 1992	15	8		39	1	
Synthesis and evaluation	June 1994	24	3	2	52	1	859
Planning	August 1995	20	5	2	36	1	661
Revision	February 1997	9	12		14	1	488
Synthesis and evaluation	December 1997	16	3		40	1	861
Regional training workshops			44	8	35		
Cali, Colombia	May 1993	10	19	1	17	2, 6	248
Maracay, Venezuela	March 1996	10	25	7	18	2, 6	313
Sub-regional training workshops			50	48	151		
Montevideo, Uruguay	August 1993	6	5	9	24	2	417
Ibarra, Ecuador	September 1993	10	5	9	27	2	363
Trinidad, Trinidad	April 1994	13	5	1	29	2	145
Panama, Panama	July 1996	9	12	9	25	2-6	347
Viña del Mar, Chile	October 1996	6	11	11	24	2-6	402
Maracay, Venezuela	November 1996	6	12	9	22	2-6	390
Other training workshops ⁵			32	7	139		
Workshop Fundación Polar, Venezuela	April 1997	1	12	3	35	2-5	
Workshop DIA, Paraguay	July 1997	1	12	2	31	2-5	
Workshop CORPOICA, Colombia	October 1997	1	3		38	2, 3	
Taller regional SDC, Ecuador	October 1997	6	5	2	35	3, 5	

Notes: (1) Number of external facilitators at planning and review workshops; number of trainers at training workshops. (2) Number of participants at planning and review workshops; number of individuals trained at training workshops. (3) Topics are as follows: 1 = project planning, review, or evaluation; 2 = PM&E; 3 = strategic management of institutional change; 4 = management information systems; 5 = competitiveness of projects; 6 = design and facilitation of participatory training events. (4) Approximate, each participant cost, per day, expressed in American dollars. (5) The institutions covered their direct costs for these workshops.

Source: Cheaz et al., 1999.

Annex 3. Sources and use of PM&E project resources

Item	IDB	SDC	ISNAR	Others ¹	NARO ²	TOTAL
Personnel and operational costs	683	0	486	169	0	1338
Personnel	607		430	162		1199
Operational costs	76	0	56	7	0	139
Planning and revision workshops	133	158	63	34	163	551
Planning workshop (2)	65		33		60	
Revision workshop (3)	68	158	30	34	103	
Component 1. Information	92	51	93	64	42	342
Books						
Case studies (4)	53		13	20	42	128
Monitoring and Evaluation: Reference manual				22		22
Training materials						
Manuals, modules, and other publications	39	51	80	22	0	192
Component 2. Training	211	252	29	11	106	609
Regional workshops (2)	34	120	6	0	16	
Sub-regional workshops (6)	177	132	23	11	90	
Component 3. Facilitation	30	95	0	0	172	297
Workshops and technical support to pilot cases	30	95			172	
Subtotal	1149	556	671	278	483	3137
Administration, overhead, incidentals	142	90	523	21		776
Total	1291	646	1194	299	483	3913

Notes: (1) "Other" includes financial support from a number of donors: IDRC, IFAD, CTA, DANIDA, GTZ.

(2) "NARO" in the table refers to the financial contributions made to the PM&E project by regional, sub-regional, and national agricultural research organizations. The figures also include an estimate of the value of time contributed to project activities by these organizations' own professionals who (i) participated in regional workshops on planning, implementing, revising, and evaluating project activities, (ii) served as instructors in regional and sub-regional training workshops delivered by the project, (iii) served as external resource persons during technical missions to pilot case organizations during the second phase of the project, and (iv) helped organize regional and sub-regional workshops in cooperation with the project. Calculations are based on World Bank figures recommended for local consultancy fees for these countries. The opportunity costs of those organizations which sent professionals to attend Project events are NOT included as financial contributions since, in ideal terms, this cost should be less than or at least equivalent to the benefits accruing to the organizations as a result of the professional training acquired by their scientists and managers. Neither do the figures include the significant costs incurred by the pilot case organizations who were required by the project to form national working groups made up of professionals who were often assigned part-time or even full-time to activities to maintain the impetus to develop and implement integrated PM&E systems.

(3) Includes the cost of the case studies workshop held in Mexico in October 1992.

Source: Cheaz et al., 1999.

Annex 4. Impacts of training at the individual level

Average scores and standard deviations for 43 indicators

	Dimension/Indicator	Pilot Cases	SD	Other Orgs.	SD	Sig. Dif.*
	Motivation (average scores)	3.28		3.07		
1	Motivation to implement the strategic approach	3.38	0.7	3.05	0.8	*
2	Motivation to undertake strategic planning	3.34	0.8	3.07	0.8	*
3	Interest in undertaking sound evaluations	3.32	0.8	3.18	0.7	
4	Interest in improving monitoring	3.32	0.9	3.15	0.7	
5	Attitude concerning changes related to PM&E in my organization	3.29	0.8	3.14	0.7	
6	Interest in improving management information systems in my organization	3.23	0.8	3.10	0.8	
7	Interest in designing and managing competitive projects	3.06	1.0	2.77	1.0	
	Capacity (average scores)	2.65		2.52		
8	Knowledge of the strategic approach	3.12	0.7	2.90	0.7	
9	Capacity to contribute to the strategic management of institutional change	2.92	0.8	2.64	0.8	*
10	Skills to undertake strategic planning	2.83	0.8	2.66	0.7	
11	Knowledge of the logical framework	2.68	0.9	2.61	0.8	
12	Skills for undertaking sound evaluations	2.54	0.9	2.47	0.7	
13	Knowledge and skills in regard to methods for training adults	2.52	0.9	2.43	1.0	
14	Knowledge about the CIPP evaluation model	2.52	1.1	2.39	0.9	
15	Knowledge about designing and managing competitive projects	2.49	1.0	2.18	0.9	
16	Capacity to design monitoring systems and procedures	2.45	0.9	2.52	0.7	
17	Knowledge about the foundations of an information management system	2.42	1.0	2.41	0.8	
	Environment (average score)	2.07		1.73		
18	Degree in which tasks demand conceptual and methodological creativity and innovation	3.00	0.8	2.56	0.8	*
19	Degree to which suggestions are accepted by colleagues	2.51	0.8	2.24	0.7	
20	Number of persons with whom I relate at work	2.41	1.1	1.66	1.2	*
21	Proportion of time assigned to PM&E	2.32	1.1	2.02	1.1	
22	Positive appreciation of performance in institutional evaluations	2.28	1.2	1.95	0.9	
23	Frequency and intensity of interaction with top management in the organization	2.21	1.2	1.80	1.2	
24	Degree of autonomy to undertake their work	2.17	1.3	1.93	1.2	
25	Access to institutional information needed for their work	2.15	1.2	1.78	1.1	
26	Number of request received for support, information or training	2.11	1.1	1.67	1.2	*
27	Institutional recognition of participant's work	2.11	1.0	1.87	1.0	
28	Position in participant's institution (e.g., Promotion)	1.57	1.3	1.09	1.2	*
29	Number of persons supervised	1.51	1.2	1.23	1.2	
30	Facilities, resources and conditions for their work	1.49	1.1	1.42	1.0	
31	Size of the managed budget	1.09	1.2	1.05	1.1	
39	Effectiveness in monitoring research activities	2.45	0.9	2.42	0.7	
40	Application of the CIPP model	2.41	0.9	2.05	0.8	
41	Designs and management of competitive projects	2.22	1.1	1.92	1.0	
42	Effectiveness in the development of training activities	2.20	1.1	2.13	1.1	
43	Contribution to the improvement of the management information system	2.02	1.1	2.08	0.9	

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Average scores and standard deviations for 43 indicators

	Dimension/Indicator	Pilot Cases	SD	Other Orgs.	SD	Sig. Dif.*
	Performance (average score)	2.48		2.26		
32	Participation in the strategic management of institutional change	2.92	1.0	2.30	1.0	*
33	Application of the strategic approach	2.80	1.9	2.62	1.7	
34	Contribution to the integration of PM&E processes	2.64	1.0	2.38	0.9	
35	Contribution to strategic planning	2.62	0.9	2.48	0.8	
36	Effectiveness in evaluating research activities	2.48	0.9	2.27	0.7	
37	Application of effective training methods when organizing training events	2.48	1.1	2.30	1.1	
38	Application of logical framework	2.46	0.9	2.22	0.9	
39	Effectiveness in monitoring research activities	2.45	0.9	2.42	0.7	
40	Application of the CIPP model	2.41	0.9	2.05	0.8	
41	Designs and management of competitive projects	2.22	1.1	1.92	1.0	
42	Effectiveness in the development of training activities	2.20	1.1	2.13	1.1	
43	Contribution to the improvement of the management information system	2.02	1.1	2.08	0.9	

Notes: Number of informants is 144.

* Indicates that the difference between average scores for pilot cases and other organizations is statistically significant at the 0.5% level.

Source: Borges-Andrade and Siri (1999).

Annex 5. Impacts of training at the organizational level

Average scores and standard deviations for 38 indicators

	Dimension	Pilot Cases	SD	Other Orgs.	SD	Sig. Dif.*
	Motivation (average score)	2.75		2.10		
1	Clarity of the mission and objectives of the organization	3.05	0.9	2.18	1.0	*
2	Recognition of the value of PM&E in the organization	2.97	0.8	2.28	0.9	*
3	Support from the research program management for establishing PM&E	2.86	0.9	1.97	0.9	*
4	Support of top management for PM&E (Ministry, director general, etc)	2.77	0.9	1.92	1.0	*
5	Promoting a strategic "culture" in the organization	2.74	0.8	1.98	0.9	*
6	Promoting a "culture" of strategic planning in the organization	2.69	0.9	2.30	0.9	*
7	Inclination of the PM&E system to address the needs of the organization and of its users	2.68	1.0	2.13	0.8	*
8	Promoting a "culture" of a well-integrated PM&E system in the organization	2.63	0.9	2.13	0.9	*
9	The degree to which research is based on societal needs	2.59	1.0	2.10	0.8	*
10	Promoting a "culture" of evaluation in the organization	2.50	0.9	2.03	0.8	*
	Capacity (average score)	2.32		1.93		
11	The plans for improving the PM&E system	2.84	1.0	2.12	0.9	*
12	The skills with which the unit/department responds to external demands	2.63	0.7	2.25	1.0	*
13	Practical application of the strategic approach in the organization	2.49	0.9	2.13	0.9	*
14	Organizational capacity to manage an institutional change process	2.47	1.0	1.88	0.9	*
15	The skill with which the organization responds to external demands	2.45	0.8	2.07	0.9	*
16	Quantity and quality of concrete activities for strengthening PM&E	2.45	0.9	1.98	1.0	*
17	Position of the unit/team of PM&E within the structure of the organization	2.44	1.0	1.93	1.1	*
18	The preparation of personnel concerning PM&E	2.43	1.0	2.08	1.0	
19	The degree of implementation of institutional or research plans	2.41	0.9	1.97	1.0	*
20	Relationship between the PM&E team and the rest of the organization	2.38	1.0	1.78	0.9	*
21	Implementation of strategic planning	2.37	0.9	2.12	0.9	
22	Degree to which information provided by the PM&E unit is used in organization decision making	2.25	0.9	1.97	1.0	
23	Formulation and management of competitive projects	2.20	1.1	1.87	0.8	
24	Influence of the results of PM&E in the research agenda	2.16	1.0	1.90	1.0	
25	Utilization of the results of evaluation within planning	2.00	1.0	1.70	0.9	
26	The resources and personnel available for PM&E	1.98	0.9	1.58	1.0	*
27	Degree of integration of the PM&E system	1.95	1.0	1.75	0.9	
28	Development of a management information system	1.88	0.9	1.63	1.0	*
	Environment (average score)	2.50		2.04		
29	Availability of technical information and methodological support to improve PM&E functions	2.70	0.9	2.43	0.9	
30	Relationship of the organization with other national or international organizations	2.50	1.0	2.17	1.0	
31	Credibility of the organization with clients, political authorities or external donors	2.46	1.1	2.07	2.0	*
32	Political support for the organization	2.32	1.0	1.48	1.0	*

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Average scores and standard deviations for 38 indicators

	Dimension	Pilot Cases	SD	Other Orgs.	SD	Sig. Dif.*
	Performance (average score)	2.30		1.90		
33	The degree to which research answers the demands of users	2.59	0.9	2.23	0.8	*
34	Productivity of the unit/department with respect to the generation of information and technologies	2.36	0.9	2.17	0.9	
35	The sustainability of the organization	2.33	1.0	1.83	1.0	
36	The productivity of the research program with respect to the generation of information and technologies	2.20	1.0	1.75	0.9	*
37	The effectiveness of the research program in terms of economic, social and environmental impacts	2.17	1.1	1.73	1.0	*
38	The productivity of the organization with respect to the generation of information technologies	2.17	0.9	1.71	0.8	*

Notes: Number of informants is 144.

* Indicates that the difference between average scores for pilot cases and other organizations is statistically significant at the 0.5% level.

Source: Borges-Andrade and Siri, 1999.

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