

## **Consultative Group on International Agricultural Research**

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From: The Secretariat

September 8, 1994

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International Centers' Week

Washington D.C.

October 24-28, 1994

### **IIMI External Programme and Management Review**

#### **Report of the First External Programme and Management Review of the International Irrigation Management Institute (IIMI)**

Attached is the Report of the First External Programme and Management Review of IIMI, together with the transmittal letter from the Chairman of TAC and the Executive Secretary of the CGIAR to the Chairman of the CGIAR; TAC's Commentary on IIMI's External Review; and the Response of IIMI's Board of Governors and management to the External Review Report.

At the ICW, the Chairman of the External Review Panel will outline the Panel's conclusions, the TAC Chairman will summarize TAC's views and the Centre will respond. Members of the Group will thereafter have the opportunity to discuss the Report and verbal presentations. A consensus will be sought on whether the Group wishes to endorse the recommendations made by the Review and/or seek any other follow-up action.

Attachment

#### **Distribution**

CGIAR Members  
Centre Board Chairs  
Centre Directors  
TAC Chair  
TAC Members  
TAC Secretariat

THE CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH  
TECHNICAL ADVISORY COMMITTEE AND CGIAR SECRETARIAT

REPORT OF THE  
FIRST EXTERNAL PROGRAMME AND MANAGEMENT REVIEW  
OF THE  
INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE  
(IIMI)

TAC SECRETARIAT  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

September 1994



CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

TECHNICAL ADVISORY COMMITTEE

Alex F. McCalla  
Chair

8 September 1994

Dear Mr. Serageldin,

We are pleased to submit to you the Report of the First External Programme and Management Review of IIMI which was conducted from 17 February to 8 March 1994 under the Chairmanship of Prof. Bernard Tinker of the United Kingdom. The Review Report and the written Response of the IIMI Board of Governors were considered by TAC at its 64th Meeting in June in the presence of the Panel Chair. IIMI was represented by Dr. M. S. Swaminathan, Chairman of the Board, Dr. Roberto Lenton, Director General, Dr. Khalid Mohtadullah, Deputy Director General, and Dr. Jacob Kijne, Director of Research.

Like all the external reviews of the CGIAR Centres since 1991, this Review was conducted through a single panel with both programme and management expertise. In line with current practice, the Panel submitted a single integrated report, an approach which has consistently demonstrated the advantages of similar joint reviews.

In addition to the Report of the Panel, there are two attachments to this letter. The first contains the TAC Commentary, which summarizes TAC's reactions to the Panel's Report and the written Response of IIMI's Board and management to the Review Report. The second attachment is the written Response of IIMI.

The Review shows that IIMI is making progress in its transition to become a full-fledged CGIAR institution, and that there have been many changes required of IIMI over a short period since its entry into the CGIAR System in January 1991. However, there is some way to go before IIMI has reached full CGIAR standards. This task will be IIMI's greatest challenge in the next few years, and TAC will carefully monitor the progress made by the Institute. IIMI has the commitment and will to complete the transformation, and the Review Report contains many helpful suggestions on what must be done to accomplish this expeditiously. The Board is in agreement with most of these and has initiated a move to implement them.

Mr. Ismail Serageldin  
CGIAR Chair  
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The case for an international research programme on irrigated agriculture is overwhelming on food security and sustainability grounds. Research on water management will be one of the most important challenges in agricultural research for several decades to come. IIMI is a main operator in this field, and is well placed to help in mobilizing the international research effort, and thus needs support at a level where it can make a significant contribution.

We recommend continued strong support of IIMI by the CGIAR. With the kinds of changes envisaged in IIMI's strategic research agenda and in its global leadership role, the Institute is likely to achieve a prominent place within the CGIAR System in the future.

Yours sincerely,



Alex McCalla  
Chairman, TAC



Alexander von der Osten  
Executive Secretary, CGIAR

## **COMMENTARY ON THE IIMI EXTERNAL REVIEW**

### **TAC Commentary on the First External Review of IIMI**

TAC thanks the Chair and members of the First External Review of IIMI for the penetrating analysis of IIMI's programmes and management. The Panel's report is clear and well-written, critical but constructive, and highlights the central issues and challenges facing IIMI. TAC agrees with the findings of the Panel and, in general, endorses the recommendations made in the Panel's Report. The Committee is pleased to note that the Board and management of IIMI are in general agreement with the Panel's findings, and have already made progress in implementing the Panel's recommendations.

This commentary, which was prepared with inputs from the CGIAR Secretariat, should be viewed in the light of the importance that TAC attaches to the subject matter covered by the Institute. The case for an international research programme on irrigated agriculture is overwhelming. Indeed, research on water management issues will be one of the most important challenges in agricultural research for several decades and a major research effort, involving inputs from many partners, will be required.

TAC therefore looks forward to the initiation of the Systemwide initiative on water management, which was proposed in the MTP process, and for which IIMI has been identified as the convening centre. It is particularly important that the Systemwide initiative includes aspects related to the understanding and monitoring of the environmental and health problems arising from irrigation, as well as the possible measures or studies that need to be developed in order to reduce or avoid such environmental degradation. Such expertise could be provided through IIMI's partners in this initiative.

In order to fulfil its mission on irrigated agriculture, IIMI will have to work with other IARCs, NGOs and national institutions mainly engaged in crop research. IIMI must increase its capacity so that it can deal more effectively with this dimension, either through links with other centres or agencies, or through increased in-house expertise. If IIMI is going to work on all issues related to irrigated agriculture, it has to deal with institutions with different perspectives. IIMI should also be aware that the irrigation issue is becoming increasingly transnational, and that this will require IIMI to be involved with a new set of institutions.

TAC strongly concurs with the Panel's suggestion that IIMI should move more towards strategic research, in which strategic issues (rather than existing country contacts and programmes) drive the research agenda. This would also help IIMI to better define its global role and programme of country activities in line with its mandate and goals. IIMI should not disperse its resources and senior scientists among too many unrelated, country-level activities which may divert it from more strategic issues of greater international significance.

The Panel makes suggestions aimed at strengthening Board performance, which is especially important, given current challenges and the fact that IIMI's long-serving Director General will soon be retiring. IIMI could benefit in particular from an increased role by the Board in guidance and oversight. Greater attention also needs to be given to a number of inter-related internal matters, including the completion of the change process, the focus on research outputs, and improving staff morale. As suggested by the Panel, a change in management style and institutional culture is needed, in order to foster openness, debate and teamwork, and motivate staff towards greater achievement.

The Panel describes IIMI's administration as working well overall, and the current efforts to further increase organizational efficiency should continue. Analytical measures of programmatic efficiency and effectiveness should also be pursued, and could feed beneficially into broader planning and review processes.

TAC endorses the Panel's recommendation that IIMI define which headquarters and country activities are properly part of its core programme, and support parts of the country core programmes with core funds. TAC notes that IIMI is developing a set of criteria for ranking projects in terms of their contribution to IIMI's core programme, derived from the research question central to each programme. Since a redefinition of core and complementary programmes may have budgetary implications, TAC would appreciate being kept informed of IIMI's progress in this regard.

IIMI's Director General will be leaving office by the end of 1994. He has played a major role in the rapid growth and expansion of IIMI, as well as its entry into the CGIAR, and the development of a new strategy and Medium-Term Plan. He and his team must be congratulated for these achievements.

One of the most important issues the CGIAR faces in meeting its overall mandate and goals is to deal with the increasing scarcity and degradation of water. IIMI, with its global mandate on irrigated agriculture, is a key Institute in addressing this issue, and thus needs support at a level where it can make a significant contribution. In TAC's view some of the problems that IIMI currently faces and the Panel has raised are transitional and arise largely from the recent entry of IIMI into the CGIAR, and its adjustment from a project-driven to a programme-driven Institute. IIMI needs to develop a strategic research agenda and should provide leadership in understanding the global aspects of site-specific irrigation problems. This task will be IIMI's greatest challenge in the next few years, and TAC will carefully monitor the progress made.



# INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE

18 April 1994

Dr. Alex McCalla  
Chair, Technical Advisory Committee, CGIAR  
Dr. Alexander von der Osten  
Executive Secretary, CGIAR

Dear Drs. McCalla and von der Osten:

On behalf of IIMI's Board of Governors and Management, we are pleased to submit to you our response to the Report of the External Program and Management Review. IIMI's Board and management have given careful attention to the Panel's analysis and recommendations, particularly those relating to the Board, the Institute's organization and management, research quality, headquarters and country programs, and the assessment of outputs and impacts. The detailed response to the Panel's recommendations and principal suggestions is provided in the attachment to this letter; in what follows we would like to comment on some of Panel's overall conclusions.

Most of the Panel's conclusions about IIMI's current and future programs are congruent with those of IIMI. These include the following:

- The importance of international research on irrigated agriculture: We share the Panel's conviction that the need for international research on IIMI's subject is overwhelming and that there is no clear alternative to IIMI at the present time. We also agree with the Panel that IIMI is a fully viable Institute and that there is no convincing argument for an amalgamation with other CGIAR centers.
- IIMI's unique opportunity to link the global picture of irrigated agriculture with user-driven demands captured in action research: The Panel has clearly endorsed IIMI's special approach to research, which is based on studies in the field with real systems and with the involvement of local organizations and farmers. IIMI agrees that there is no alternative to the approach if the results are to have impact. We are pleased that the Panel has commended IIMI for its willingness to work in the field on real problems, and has supported a continuation of the practical problem solving tradition which currently forms such a strong part of the Institute's culture.
- The essential role of interdisciplinarity to the achievement of IIMI's mission: We are pleased that the Panel has highlighted IIMI's ability to effectively integrate staff with socio-economic and bio-physical disciplinary affiliations. We concur with the Panel that this interdisciplinary facility is one of IIMI's major strengths, and that we can provide a model for other institutes in this respect.

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- IIMI's change in mission statement: We agree that one consequence of IIMI's change in mission statement, from one that emphasized irrigation management to one focussing on irrigated agriculture, is that IIMI needs to develop more formal and effective relationships with other CGIAR Centers with agronomic capacity. For this reason, we concur with the emphasis that the Panel has given to collaboration between IIMI and selected other CGIAR centers in its future work as the convening center for an inter-center initiative on water resources research.
- The need to address the environmental costs that accompany efforts to improve the productivity of irrigated agriculture in developing countries: We strongly endorse the Panel's recommendation that IIMI strengthen those components of its program that study the relationship between irrigated agriculture and the environment, and have elaborated on this further in our detailed response. (IIMI also endorses the Panel's view that it should devote greater attention to research on gender issues.)

Quite appropriately, the Panel has paid particular attention to examining the steps that IIMI has taken to meet the expectations of the CGIAR and TAC in transforming itself into a CGIAR Center with a strategic research agenda. IIMI appreciates the Panel's careful analysis of science and science quality at IIMI. The Panel has identified a number of research issues that need urgent attention; IIMI is addressing these issues and is committed to complete its transformation into a full-fledged CGIAR institution.

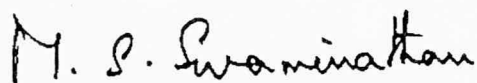
The Panel has also provided a detailed analysis of IIMI's organization and management, and has alerted the Institute to issues that require the urgent attention of the Board and the senior management team. With the guidance of the Board of Governors, IIMI's Director General and the management team are making the necessary changes to improve research staff morale and make the most effective use of IIMI's human resources.

IIMI's country programs and the Institute's relationship with national agencies were singled out for comment by the Panel. We are pleased that the Panel concluded that national collaborators have confidence in us and high hopes for strengthened linkages, and that IIMI staff in the main host countries are respected and influential. At the same time, we share the Panel's concern about the dispersion of country program efforts, and are carefully reappraising this part of IIMI's activities.

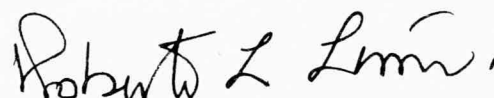
While IIMI's Board and management have endorsed all but one of the Panel's recommendations and most of its suggestions, we need to point out that the implementation of some of the Panel's recommendations can not be effectively achieved without additional financial resources and senior staff.

In closing, we wish to express our appreciation to the External Review Panel for their valuable report. We are confident that this report will assist us in the further development and growth of the Institute.

Yours sincerely,



M.S. Swaminathan  
Chair, Board of Governors



Roberto Lenton  
Director General



**Joint Response of IIMI's Board and Management to the Recommendations  
of the External Program and Management Review of March 1994**

**1. Gender Issues (Section 3.3.6.1):**

**All programmes and projects be reviewed for research opportunities related to gender, and objectives be established based on these.**

IIMI recognizes the fundamental importance of gender roles in irrigated agriculture and agrees on the need to devote greater attention to this subject in its research. There are two areas of special interest to IIMI in relation to gender: (1) the analysis of farm household behavior in order to understand the linkages among the performance of irrigated systems, agricultural production, and broader socio-economic and environmental impacts; and (2) the analysis of the participation of women in water users organizations and how their participation could be enhanced. The latter area is directly related to the institutional and organizational studies IIMI is presently conducting.

**2. Environmental Issues (Section 3.4.2.1):**

**IIMI explore opportunities to expand its research on the environment, particularly in relation to the Systemwide initiative on water management.**

Food security in developing countries relies heavily on the performance of irrigated agriculture. Sustained advances in the productivity of irrigated crops are essential both for increasing output per units of land and water and for preventing more forest land coming under food crop cultivation. Intensification of irrigated farming is however not without environmental costs. IIMI's environmental agenda will include: (a) integration of environmental parameters in performance assessment indicators, (b) mitigation strategies to minimize hazards such as salinization and water logging and the release into the atmosphere of methane gases from rice fields, and (c) control of disease-carrying vectors. While the first area of research can be carried out by IIMI alone, cooperation with other appropriate national and international institutions will be sought in the other two areas. IIMI's role as convening center for an inter-center initiative on water management research will be utilized for examining through a cooperative network many aspects of irrigation and the environment.

**3. Integration Between Research and Institutional Strengthening (Section 3.4.2.2):**

**Each country research activity and most institutional strengthening activities be associated with a research programme, with the Director of Research and the Deputy Director General coordinating this integration.**

From its inception, IIMI has recognized the importance of linking research conducted in functioning irrigation systems with efforts to strengthen capability to manage these systems. IIMI has also recognized its unique comparative advantage of linking the global picture of irrigated agriculture with user-drive demands captured in country-level action research. For this reason, it fully supports and endorses the

recommendation that each country research activity and most institutional strengthening activities be associated with a research program. This recommendation, together with recommendation 5 (below), will be a crucial element in IIMI's efforts to achieve its integration objectives.

To implement the recommendation, IIMI is ensuring that country-level research is directly linked to broader research priorities while retaining local relevance, and that all country research activities are the shared responsibility of the corresponding research Program Leader and the Country Program Head. Importantly, the Director for Research is assigning program leaders to share responsibility with, and support, the country program heads. Program leaders and country heads will jointly develop annual workplans, specifying inputs and agreed outputs and milestones.

4. **Country Programmes (Section 4.3):**

**(a) IIMI plan its country programmes to make maximum impact in the near term; and (b) critical mass to implement country programmes be located in very few countries, while work in most other countries be carried out without resident staff if it is part of a project based in Headquarters or country centres with critical mass.**

IIMI fully supports both parts of this recommendation.

IIMI has endeavored to plan its country programs to make maximum short-term impact. Doing so effectively requires (1) agreeing in advance on the kind of impact IIMI expects to achieve; (2) facilitating learning further lessons from countries and programs in which IIMI has already shown results; (3) understanding country needs and strategies and examining how IIMI can contribute to achieve impact; and (4) making best use of national professionals and institutions.

IIMI agrees that critical mass to implement country programmes can be located in very few countries. In choosing such countries, IIMI will continue to give special consideration to those countries in which increasing the productivity of irrigated agriculture in a sustainable manner is critical to food security and in which IIMI can have the greatest impact.

IIMI agrees with the Panel that the concept of "critical mass" is more a relative criterion than an absolute one. It can be achieved in a number of ways, including through collaboration with national institutions and other CGIAR Centers, and through the use of highly qualified consultants and national professional staff.

5. **Integration Between Headquarters and Country Programmes (Section 4.3):**

**IIMI define which headquarters and country activities are properly part of its core programme, and support parts of the country core programmes with core funds.**

IIMI fully supports this recommendation, and agrees with the Panel that the effectiveness of country programs has been hampered by their classification as complementary. IIMI's country core programs, such as those that IIMI is undertaking to address secondary salinization resulting from poor systems management in



Pakistan, lie at the heart of IIMI's mission to improve the performance of irrigated agriculture and therefore should quite properly be considered a part of IIMI's core program. IIMI's experience with its definition of core and complementary programs has shown that the rigidity of this definition has been a major obstacle in achieving integration, and we are grateful to the Panel for its analysis of this issue.

To implement this recommendation, IIMI is developing a set of criteria for ranking projects in terms of their contribution to IIMI's core program, derived from the research questions central to each program. Once these criteria have been agreed upon, IIMI will select the projects that will be considered to lie within its core program.

The implementation of this recommendation will require the approval of TAC and the CGIAR, and the proposed redefinition of core and complementary programs has budget implications. TAC should take these matters into account in reviewing IIMI's future program and budget proposals.

#### 6. **The Board (5.1.2):**

**The Nominating Committee should develop a mechanism to assess regularly the composition of the Board, and the contributions of individual Board members and officers.**

The Board fully agrees on the need to assess regularly the composition of the Board and the contributions of individual Board members and officers. However, the Board Chair, rather than the Nominating Committee, should directly assess the contributions of individual Board members and share his views with the Chair of the Nominating Committee. Such an assessment is needed when (1) the Board is considering the re-election of Board members for a second term and (2) the Board is asked to recommend Board members for service on other CGIAR Boards.

The Board believes that the selection of Board members should be done with extreme care, based primarily on their ability to contribute to the fulfillment of IIMI's mission. Careful selection of Board members is particularly critical in view of the Board's decision to reduce the size of the Board.

#### 7. **Programme Support (Section 5.2.1):**

**A Programme Support Unit be created that includes project development, training, information, and computer services.**

IIMI agrees with the Panel on the importance of information, training, computers, and project development to the research agenda, and believes that these functions are currently managed effectively by IIMI. In keeping with the Panel's recommendation that IIMI stabilize its organizational structure, IIMI proposes not to make the organizational change that this recommendation entails.

8. **Oversight of Programmes (5.2.3):**

**The programme review, forward planning, and monitoring process be based on pre-established objectives for each project, and be fully and consistently implemented.**

IIMI fully supports this recommendation. Like the Panel, IIMI firmly believes in a project based system in which the central unit of program management is the project (although of course IIMI's programs should determine the projects to be developed and implemented). IIMI also agrees on the need to fully and consistently implement the program review, forward planning and monitoring processes outlined in its strategy and other documents. Particular attention must be given to preparing detailed workplans at the project and program level for the guidance of IIMI's research staff.

As an immediate step, Program Leaders and Country Program Heads are being assigned responsibility to develop annual workplans with specific milestones and outputs, to monitor progress against these objectives, and to report periodically on these matters. In addition, IIMI is revamping its annual program planning exercise to ensure that objectives for each project and program are clearly articulated, and restructuring its Internal Program Review to make it a more effective mechanism for reviewing program results.

9. **Programme Management (Section 5.3.4):**

**The Programme and Project Subcommittee be chaired by the Director of Research and charged with oversight over research and ensuring an adequate level of publication.**

IIMI fully agrees with this recommendation, which it has already implemented. The Subcommittee is responsible for oversight of program outputs and impacts, including publications (see also response to recommendation #11, below).

10. **Stabilization and Management (Section 6.1.1):**

**IIMI stabilize its organizational structure, decentralize responsibility as advised in the Report, and concentrate upon improving management for maximum effectiveness and establishing an organizational climate to stimulate excellence.**

IIMI thanks the Panel for its detailed analysis of IIMI's organization and management. Clearly, the Institute faces several problems that relate to staff morale, management effectiveness and delineation of responsibilities that require the urgent attention of the Board and the senior management team.

Like the Panel, IIMI regards this recommendation as the keystone of the Panel's Report. The four major components of this recommendation are addressed in turn below.

Stabilization of Organizational Structure: IIMI concurs that the many changes at IIMI over the years have been unsettling to staff and that operational stability is now an urgent necessity. IIMI is therefore stabilizing its organizational structure; in keeping with the Panel's suggestions, this is being accompanied by a reorganization of program management through a participatory process.

IIMI also notes the Panel's other comments on the current organizational chart. One management position will be eliminated effective 30 June 1994 when the Director for International Cooperation retires.

Decentralization of Responsibility: IIMI fully agrees with the need for greater decentralization of basic responsibility and authority to Program Leaders and Heads, in order to create a stronger sense of ownership over these programs. IIMI also agrees with the Panel that the process of decision-making needs to be made more transparent by clearly delineating where responsibilities lie at all levels. The Director General has already taken firm steps to clarify these questions; a responsibility chart specifying decision-making responsibilities at all levels is under preparation and will be circulated widely within the Institute in the near future.

Improving Management for Maximum Effectiveness: IIMI's management has already taken steps to make the process of decision-making more transparent, to indicate ways in which staff inputs will be used in decision-making, and to communicate management decisions more effectively to staff. IIMI fully agrees with the Panel that whereas the earlier participatory style of IIMI may no longer be practicable at an institute-wide level, participatory action can certainly be taken at the country and program levels. IIMI staff are committed to ensuring that delegation of authority and responsibility to lower levels of the organization will be accompanied by a participatory style of management at these levels.

Establishing an Organizational Climate to Stimulate Excellence: IIMI fully agrees with the Panel that, in research, an important determinant of performance is the quality of the work climate. The Director General and the management team are making the changes in management style, communication, and decision-making needed to ensure that research staff feel responsible for their projects and programs. IIMI's Director for Research is also taking firm action to improve research staff morale, enhance interactions among scientific personnel, and regain the climate of collegiality among researchers that earlier prevailed at IIMI.

#### 11. **Refereeing and Publishing (Section 6.3.2.1):**

**An Editorial Committee, with a Publications Review Subcommittee, be appointed to manage IIMI's publications and ensure quality.**

IIMI produces publications for two distinct audiences: the scientific community, and irrigation policy-makers and managers. Scientific audiences are best reached through refereed journals, which have their own peer review mechanisms. IIMI will set up an Editorial Committee to ensure quality content in its own publications. The Committee will be managed by IIMI's research staff, and will undertake the tasks recommended by the External Review Panel.

## Response to Principal Suggestions<sup>1</sup>

### Section 3.4.3 - Inputs in Adjusting to Strategic Research

**On page 38, the Panel suggests that the decision-making processes through which research projects are defined, external financial support for contract project is sought, research teams are organized and staffed, and the relevance and quality of research is monitored should be more decentralized to the level of program leaders.**

IIMI endorses this suggestion. Although responsibility for mobilizing external financial support for projects must remain with the management team, in view of IIMI's desire to move from a donor-driven to a program-based approach, Program Leaders can and do play a facilitating role in seeking financial support for projects.

### Section 4.4 - Training

**On page 47, the Panel suggests that reinstating training capacity is a high priority, and that IIMI's training efforts should draw primarily on its knowledge base.**

IIMI fully endorses and supports these suggestions, and is taking steps to further developing its training and institutional strengthening activities despite the departure of its senior management training specialist. IIMI also endorses the need to ensure that its training and institutional strengthening efforts build on its research results.

### Section 4.6 - Suggestions for Improving Institutional Strengthening

**On page 49, the Panel suggests that explicit strategies for institutional strengthening be formulated country by country on the basis of discussion among IIMI staff and with national collaborators.**

IIMI fully endorses the need for such country strategies, and is implementing this suggestion.

### Section 5.1.3 - Board Leadership

**On page 53, the Panel has five suggestions: First, the appraisal of the Director General and the setting of his goals for the ensuing year are a critical part of Board oversight, and these matters need to be given a clearer and more conclusive treatment than was the case in the December 1993 Board meeting. All appraisals of senior management should focus on output rather than input measures. Second, as the last item on each Board agenda, there ought to be a closed session in which the Governors assess how the Board and Committee meetings have proceeded, and what might be done in the future to**

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<sup>1</sup> Only the more important suggestions are considered here; with respect to the others, IIMI's Board and Management has found them valuable and helpful, and expects to put them into practice.

improve their effectiveness. Third, before the agenda for a forthcoming Board meeting is finally decided, each Governor should be encouraged to suggest items which he or she feels should be included. Fourth, the Board should periodically review the quality of its decisions. Fifth, the Board should seek closure on important issues (such as definition and measurement of critical mass for country projects discussed at the April 1993 Board Meeting) to give IIMI managers clear policy direction.

The Board accepts these five suggestions, which it believes can help to improve the effectiveness of the Board, and is putting them into practice.

#### **Section 5.3.4 - Proposed Changes to the Organization and Management of Programmes**

**On page 62, the Panel suggests that greater attention is to be given to the prior specification of performance criteria and milestones.**

IIMI endorses this suggestion; IIMI's Program Leaders are giving priority attention to this matter at the project and program levels.

#### **Section 6.1.3 - Staff Performance Appraisal System**

**On page 65, the Panel suggests that the staff performance appraisal process be strengthened. On page 67, the Panel suggests that IIMI's appraisal system for national staff be linked with a clearly articulated and active training and career development policy.**

IIMI agrees with the Panel's comment that the performance appraisal process is strong but believes it can be improved to identify training needs and staff development goals for international staff as well as national staff. IIMI also endorses the Panel's suggestion that the appraisal system be linked clearly with an articulated career development policy. Greater attention will be given in the appraisal form to furthering institutional goals, maintaining strong relations with colleagues and partners, adhering to budget and management skills. Management is considering adding directly to the Performance Appraisal Form sections which evaluate these aspects of an employee's performance.

#### **Section 6.2 - Budget and Finance**

**On page 69, the Panel suggests that budgetary procedures need to be strengthened, and managers with budget responsibilities need to receive a clear signal that they are going to be held accountable for their performance against budgets.**

With regard to enhanced budget controls, there are two levels at which this can operate: First, IIMI can strengthen management attention to budget discipline; and second, IIMI can strengthen its "command" systems which control expenditures. Towards this end, IIMI will strengthen attention to performance against budget within the appraisal system; apprise Directors monthly of predicted budget overruns; invite external auditors to review the budget process and controls and recommend practical strengthening measures; and reduce the expenditure review level of \$1,000. In addition, at the start of the budget cycle in June, the Institute will hold orientation sessions with managers with budgetary responsibilities, to emphasize the importance of budget discipline, to ensure that there is a common

understanding of budgetary responsibilities in the budget process and to lay out the expectations for performance against budgets in the future.

**On page 70, the Panel suggests that the Budget Subcommittee be chaired by the Director of Finance and Administration.**

IIMI has already implemented this suggestion.

**On page 70, the Panel suggests that IIMI's external and internal auditors be better linked.**

IIMI endorses this suggestion and has already implemented it.

#### Section 8.4 - Impact and Achievements

**On page 96, the Panel states that IIMI should make every effort to codify and demonstrate its program impact.**

IIMI is pleased that the Panel has recognized the impact of IIMI's work, but recognizes that it needs to make special efforts to ensure that it properly informs the world of its successes, both in research and in impact. IIMI intends to commission special studies to evaluate and quantify its program impacts. IIMI also intends to ensure that impact indicators are built into its major projects and programs.



**Prof. P. Bernard Tinker**

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7 March 1994

Dr. Alex McCalla  
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Mr. Alexander von der Osten  
Executive Secretary  
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Washington, DC 20433, USA

Dear Dr. McCalla and Mr. von der Osten,

I am pleased to transmit to you the Report of the First External Programme and Management Review Panel appointed to assess the International Irrigation Management Institute. This is the first external review of IIMI since the Institute began, in January 1991, to operate within the CGIAR System, and to transform from the 'old IIMI' towards the 'new IIMI' it wishes to become.

IIMI has an important and a critical mission to accomplish in helping to achieve the necessary and rapid increases in output and in productivity of food crops in irrigated agriculture. Accomplishing this task through intensification, and against the prospects of a decreasing share of water supplies for irrigation, represents a formidable technical, policy and managerial challenge at all levels. It will be the task of irrigation management research and IIMI in particular to help generate the knowledge base required to transform and modernize irrigated agroecosystems in the developing nations.

The need for a CGIAR role in helping to meet the above challenge provided the justification for IIMI's entry into the CGIAR System in January 1991. As the Report shows, IIMI has taken definite steps to meet the expectations of the CGIAR and TAC, though progress has been modest and uneven due to the need to develop both a strategic research agenda and a suitable organizational structure to implement it. Nonetheless IIMI

is now showing dynamism in pursuing its aim of moving away from the legacy of donor-driven operation to a more strategic demand-driven programme approach, whilst maintaining the positive aspects of this legacy.

At the same time we are pleased to note that IIMI is already beginning to occupy an important position in research on irrigation management, and national collaborators generally have expressed confidence in and high hopes for IIMI. Also, the Institute's past record in the field is not insignificant, and IIMI is aiming to strengthen its links with key countries where it can take a longer-term view of its commitments, and thereby maximize the potential for impact.

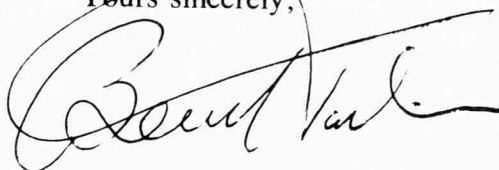
Since joining the CGIAR, IIMI has gone through a major planning process, in which it has developed its Strategy document and its 1994-98 Medium-Term proposals. These provided valuable information that was helpful to the Panel's work, and also an insight into the wider goals and vision of the Board and Management. The Panel concluded that the emphasis on irrigated agriculture in IIMI's mission statement is correct, and the emerging programme structure is generally adequate and should be given a chance to succeed. IIMI now needs to create a climate of stability for itself so that it can achieve a sharper focus within each programme as it implements its Medium-Term Plan.

Consultations and interactions with IIMI Management and staff at every level were extensive, frank and cordial. We greatly appreciated the detailed and helpful documentation and presentations provided by IIMI, and the efficient and friendly way in which all members of the staff, from the DG down, gave us support. We are also grateful to the numerous irrigation and agricultural scientists, managers and government officials who shared with us, in many parts of the world, their perception of IIMI and its activities - particularly to those who received us so warmly during our visits to Sri Lanka, Pakistan, India, Indonesia, Philippines, Nigeria, Niger and Burkina Faso.

I want to add my own warm personal thanks to the members of the Review Panel for their efforts to make the Report full, fair and accurate and the colleagues from the TAC Secretariat, Dr. Amir Kassam, and from the CGIAR Secretariat, Ms. Elizabeth Field, for their invaluable help. Without them we could not have completed the task.

In closing, all the Panel members join with me in expressing gratitude for the opportunity to be part of this Review Panel. We have been impressed and encouraged by the dedication and enthusiasm of IIMI's staff, and hope that this Review will assist them in IIMI's future development.

Yours sincerely,



P. Bernard Tinker  
Chair, IIMI  
External Programme and  
Management Review Panel



THE CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH  
TECHNICAL ADVISORY COMMITTEE AND CGIAR SECRETARIAT

REPORT OF THE  
FIRST EXTERNAL PROGRAMME AND MANAGEMENT REVIEW  
OF THE  
INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE  
(IIMI)

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TAC SECRETARIAT  
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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## TABLE OF CONTENTS

	<u>Page</u>
Preface	xix
Summary and Recommendations	xxi
 <b>CHAPTER 1 - A PERSPECTIVE ON IRRIGATED AGRICULTURE</b>	
1.1 The Role of Irrigated Agriculture in Global Food Security	1
1.2 Research Needs in Irrigated Agriculture	3
1.3 The Irrigation Research Community	5
 <b>CHAPTER 2 - CREATION AND EVOLUTION OF IIMI</b>	7
2.1 Origin and Creation of IIMI	7
2.2 Evolution of IIMI	7
2.2.1 The CGIAR Involvement	8
2.2.2 Justification for IIMI's Entry into the CGIAR System at the Time of the 1990 Debate on the Possible Expansion of the CGIAR	9
2.2.3 TAC's Recommendations on CGIAR Priorities and Strategies in Public Management Research	9
2.3 IIMI's Current Strategy	10
2.3.1 IIMI's Mission and Goals	11
2.3.2 Programme Structure and Approach	11
2.4 IIMI Today	12
2.5 The 1990 Donor-Sponsored Review of IIMI and the Centre's Response	15
 <b>Chapter 3 - RESEARCH PROGRAMME</b>	
3.1 Overall Considerations on Irrigation Management Research	17
3.2 Observations and Recommendations Made in Previous Reviews	18
3.2.1 1987 Review Mission	18
3.2.2. 1990 External Programme and Management Review	18

3.3	Review of the Research Programme	19
3.3.1	Programme 1: Assessing and Improving the Performance of Irrigated Agriculture	19
3.3.2	Programme 2: Sector-Level Management of Irrigated Agriculture	23
3.3.3	Programme 3: Improving Public Irrigation Organizations	24
3.3.4	Programme 4: Toward the Local Management of Irrigation Systems	24
3.3.5	Programme 5: Sustainable Management of Water Delivery and Disposal	25
3.3.6	Cross-cutting Themes	27
3.4	Overall Assessment of Research and Recommendations	29
3.4.1	The Product of Adjustment to Strategic Research: Quantity and Quality of Research Output	29
3.4.2	The Process of Adjustment to Strategic Research	31
3.4.3	Needs in Adjusting to Strategic Research	37

## **CHAPTER 4 - INSTITUTIONAL STRENGTHENING PROGRAMMES**

4.1	Overview	39
4.2	Country Programmes	39
4.2.1	South Asia	39
4.2.2	Southeast Asia	42
4.2.3	West Asia and North Africa	43
4.2.4	West Africa	44
4.2.5	Latin America	45
4.3	Consideration of Country Programmes	45
4.4	Training	47
4.5	Information Dissemination and Networking	48
4.6	Suggestions for Improving Institutional Strengthening	49

## **CHAPTER 5 - ORGANIZATION AND MANAGEMENT**

5.1.	Governance	50
5.1.1	Board of Governors	50
5.1.2	Board Committees	50
5.1.3	Board Leadership	52

5.2.	Leadership and Organization	53
5.2.1	Organization Structure	53
5.2.2	Leadership and Senior Management	55
5.2.3	Planning, Monitoring and Review	56
5.3.	Programme Management	58
5.3.1	Research Characteristics	58
5.3.2	Programme Organization and Management	59
5.3.3	Planning, Monitoring, and Review of Programmes	59
5.3.4	Proposed Changes to the Organization and Management of Programmes	61

## **CHAPTER 6 - ADMINISTRATION AND OPERATIONS** 63

6.1	Management of Human Resources	63
6.1.1	Staff Morale	63
6.1.2	Human Resources Planning and Development Process	64
6.1.3	Staff Performance Appraisal System	65
6.1.4	General Observations on Personnel Policies	67
6.2	Budget and Finance	68
6.2.1	Financial Management	68
6.2.2	Integrated Planning and Control Systems	69
6.2.3	External Audit	70
6.2.4	Internal Audit	70
6.3	Support Services	71
6.3.1	Administrative Services and Facilities	71
6.3.2	Information Services	73

## **CHAPTER 7 - INSTITUTIONAL RELATIONSHIPS** 79

7.1	Overview	79
7.2	Relations with National Institutions	79
7.3	CGIAR Centres and Other International Organizations	82
7.4	Advanced Institutions	85

7.5	Donor Relations	89
7.6	Conclusions	90

<b>CHAPTER 8 - THE SPECIAL ISSUES</b>	<b>92</b>
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8.1	IIMI within the CGIAR System	92
8.2	Research Management and Science Quality	93
8.3	IIMI's Mission and Objectives	94
8.4	Impact and Achievements	95
8.5	IIMI's Country Programmes and its Relationship with National Agencies	96
8.6	Water Management and Environmental Issues	97
8.7	IIMI's Future	98
8.8	Conclusion	99

<b>ACKNOWLEDGEMENTS</b>	<b>100</b>
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**APPENDICES:**

Appendix I	-	Composition of the Review Panel and Biographical Information
Appendix II	-	Terms of Reference for External Reviews of CGIAR Centres
Appendix III	-	List of Institutions Visited and Persons Met or Contacted
Appendix IV	-	Survey on IIMI Programmes and Performance
Appendix V	-	Documents Provided to the Review Panel
Appendix VI	-	Assessment of IIMI's Progress in Implementing the Recommendations of the 1990 Donor Sponsored Review
Appendix VII	-	Glossary of Acronyms

## PREFACE

This is the Report of an External Review Panel appointed to review the programme and management of the International Irrigation Management Institute (IIMI). The membership of the Panel and their backgrounds are listed in Appendix I.

The detailed Terms of Reference for this First External Programme and Management Review of IIMI (main phase in February/March 1994) are shown in Appendix II. In broad outline, the Panel was asked to:

- assess the recent evolution of IIMI, its mission, strategy, programmes, organization and management;
- review the methods and processes used by IIMI to ensure quality and relevance in its activities, services and outputs;
- assess the effectiveness of management, including leadership, values and culture;
- review the ways in which IIMI collaborates with other institutions within and outside the CGIAR;
- assess IIMI's achievements and impact; and
- assess the adequacy of the facilities and resources available to IIMI in relation to its current and future scale of activities.

The Panel's approach to the Review has been open, participatory and forward-looking. In conducting it, the Panel has followed the general guidelines for the CGIAR review process.

The information on which the Panel based its assessments and conclusions were gathered in a number of ways. The Panel spent a week at IIMI in November 1993 to familiarize itself with the Centre, and again for three weeks from 17 February to 8 March. In each case, it received presentations from Management and staff, and met them in groups and individually.

The initial visit to the Centre was followed by visits in groups or singly, to national institutions and IIMI's field operations in Sri Lanka, Pakistan, India, Indonesia, Philippines, Nigeria, Niger and Burkina Faso. The Panel Chair and the Management Consultant visited IIMI during the time of its Internal Programme Review and the Board meetings which were held from 28 November to 5 December 1993. At that time the opportunity was taken to interview all the Board members individually.

The Panel members also discussed IIMI with officials of several CGIAR member governments and organizations, and with irrigation scientists and administrators familiar

with IIMI in some of the industrialized countries. Visits were made by the Panel Chair to ODA and ODI, London, Hydraulics Research Limited, Wallingford, a Panel member to ISNAR and IFAD, and Panel Resource Persons to IRRI, ICLARM, IPTRID and the Office of the Committee on Sustainable Agricultural Development, Washington. Panel members were also able to meet or hold telephone discussions with representatives of IFPRI, ICRISAT, IITA and IBSRAM. A list of institutions and individuals visited or contacted is given in Appendix III.

In addition to visits, the Panel gathered information through several surveys: a questionnaire sent to a wide cross-section of irrigation scientists, administrators, managers and policy-makers in developing countries (the results are summarized in Appendix IV); a survey of IIMI staff asking their views regarding the effectiveness of management, including leadership, values and culture; responses to a letter sent to CGIAR and non-CGIAR institutions collaborating with IIMI; and responses to a letter sent to all CGIAR members and regional representatives.

Finally, the Panel had access to a large array of documents and data made available by IIMI. Additional documents were provided by the TAC and CGIAR Secretariats. A list of documents furnished to the Panel is shown in Appendix V.

Altogether, we believe we were able to obtain sufficient information to enable us to put forward with confidence the analysis, conclusions and recommendations in this Report. We hope that this Report will be useful to TAC, to the CGIAR, and most of all to IIMI itself.

## **SUMMARY AND RECOMMENDATIONS**

The Panel summarizes its findings and judgements in the form of answers to five questions, followed by the eleven recommendations contained in this Report.

### **1            Is There a Need for an International Effort in Irrigated Agriculture Research? (Chapters 1 and 2).**

The Panel's analysis shows that the case for an international research programme on irrigated agriculture is overwhelming on food security grounds. This emphasizes the importance of irrigation management research, especially in relation to possible water scarcity. IIMI is the main operator in this field. IIMI works in a dispersed and heterogeneous community of irrigation organizations which contribute to research that promotes improvement in irrigated agriculture. This renders its work complex and it is heavily stretched to collaborate with a number of them. However, IIMI is well placed to help in mobilizing this effort, but it must become a centre of excellence in its own field to be able to play an effective catalytic role.

IIMI began as a donor-supported organization but entered the CGIAR System in January 1991. Since then it has been upgrading its systems and in particular it has prepared its Strategic and Medium-Term Plans. These have been accepted by TAC and the CGIAR, and the Panel has judged them suitable to guide IIMI for the next few years. There have been many changes required of IIMI over a short period, and there is still some way to go before it has reached full CGIAR standards.

### **2            Is IIMI Doing the Right Work and Will it Succeed in Transforming Itself into a Full-Fledged CGIAR Institution? (Chapters 3 and 4).**

IIMI's research programme has been oriented towards field work and impact. The Panel believes that this should continue and IIMI should aim for maximum impact in the near term, but that a strategic element has to be added on science, as IIMI is a CGIAR Centre. The country and Headquarters research need to be better integrated, as do research and institution strengthening activities. The latter are well regarded by national cooperators, but the training programme needs to be reinstated.

IIMI's strategic research agenda is developing slowly. The challenge for IIMI is to define the right balance between field relevance and scientific achievement. IIMI has made a fair start on this, and we urge it to persevere. However, opportunities for research in gender and environmental issues need to be developed. At present the number of publications is inadequate, particularly papers in refereed journals. IIMI is advised to clarify its whole publication policy. The Panel is convinced that IIMI has the commitment and will to complete the transformation into a full-fledged CGIAR institution.



### **3 Is IIMI Governed and Managed Effectively and Efficiently? (Chapters 5 and 6)**

The short answer is, "in part". IIMI has grown at a rapid rate. The Board has strong membership but it may need to strengthen its operating procedures. The Panel advises that the Board introduce an assessment system to evaluate the contributions of Board members and officers.

IIMI's administration works well and its approach to human resource management appears fair. The management of programmes is less good, and there is some confusion in responsibilities. The Panel advises that a measure of decentralization is required with more authority delegated down the line. A main element would be that the Director of Research should chair and run the Programmes and Projects Subcommittee. The management style may have caused some loss of morale, and the Panel has advised how it believes this could be corrected. In particular, now that the MTP is accepted as viable, it believes that IIMI should aim at stabilizing its structure and concentrate on improving its management procedures.

IIMI's planning, monitoring and review process is good in theory but needs to be better implemented, with pre-established objectives at different levels.

### **4 Is IIMI Developing Institutional Linkages? (Chapter 7)**

IIMI needs to develop institutional relationships because it cannot successfully accomplish its goals without them. These relationships must be forged with national irrigation agencies and research institutions, as well as with international institutions both within and outside the CGIAR.

The Panel believes that IIMI is respected, and as a result is influential, in the main host countries. However, benefits of collaboration usually come over time, and IIMI must be very selective in its country programmes. IIMI needs to develop clear criteria for deciding where country programmes should be established, and IIMI should not start a country programme without clear objectives for research or impact. The Panel has advised on how critical mass could be maintained.

IIMI's relations with other CGIAR Centres is developing, but rather slowly. IIMI needs to get experience in inter-centre collaboration because of its nomination as the convening Centre for a Systemwide programme on water management research. The Panel regards this as a very important opportunity for IIMI and urges the Institute to seize it.

### **5 Is IIMI Viable and Can it Deliver? (Chapter 8)**

Every Review should ask the question whether the Centre should continue at all. We have no doubt that work is urgently necessary in IIMI's subjects and that there

is no clear alternative to it in the world at the present time. The Panel believes IIMI to be viable on its own, and sees no advantage in an amalgamation.

We have found that IIMI has had useful impact already and needs more. It also needs to improve strategic science and science quality. The Panel believes that IIMI can do both these things.

## **RECOMMENDATIONS**

### **The Panel recommends that:**

1. Gender Issues (Section 3.3.6.1):

All programmes and projects be reviewed for research opportunities related to gender, and objectives be established based on these.

2. Environmental Issues (Section 3.4.2.1):

IIMI explore opportunities to expand its research on the environment, particularly in relation to the Systemwide initiative on water management.

3. Integration Between Research and Institutional Strengthening (Section 3.4.2.2):

Each country research activity and most institutional strengthening activities be associated with a research programme, with the Director of Research and the Deputy Director General coordinating this integration.

4. Country Programmes (Section 4.3):

(a) IIMI plan its country programmes to make maximum impact in the near term; and  
(b) critical mass to implement country programmes be located in very few countries, while work in most other countries be carried out without resident staff if it is part of a project based in Headquarters or country centres with critical mass.

5. Integration Between Headquarters and Country Programmes (Section 4.3):

IIMI define which Headquarters and country activities are properly part of its core programme, and support parts of the country core programmes with core funds.

6. The Board (5.1.2):

The Nominating Committee should develop a mechanism to assess regularly the composition of the Board, and the contributions of individual Board members and officers.

7. Programme Support (Section 5.2.1):

A Programme Support Unit be created that includes project development, training, information, and computer services.

8. Oversight of Programmes (5.2.3):

The programme review, forward planning, and monitoring processes be based on pre-established objectives for each project, and be fully and consistently implemented.

9. Programme Management (Section 5.3.4):

The Programme and Project Subcommittee be chaired by the Director of Research and charged with oversight over research and ensuring an adequate level of publication.

10. Stabilization and Management (Section 6.1.1):

IIMI stabilize its organizational structure, decentralize responsibility as advised in the Report, and concentrate upon improving management for maximum effectiveness and establishing an organizational climate to stimulate excellence.

11. Refereeing and Publishing (Section 6.3.2.1):

An Editorial Committee, with a Publications Review Subcommittee, be appointed to manage IIMI's publications and ensure quality.

## **CHAPTER 1 - PERSPECTIVES ON IRRIGATED AGRICULTURE**

### **1.1 The Role of Irrigated Agriculture in Global Food Security**

According to the UN estimates, the current world population of 5.5 billion will increase to 10 billion by 2050. About 97% of that increase will occur in the developing countries, and two-thirds of this growth is expected to take place in the cities.

Parallel to this it is likely that the present worldwide economic growth will continue and result in rising incomes and standards of living, and hence in the demand for a meat-based diet. This will cause an increased demand for agricultural products, which will be added to the extra demand arising from population increase. It is estimated that total food demand in the developing countries will increase by approximately 150% by 2025. The continuing population increase will result in a decline of available cultivable land per capita worldwide from 0.3 ha in 1988 to 0.17 ha in 2050, with only 0.11 ha per capita in developing countries.

It is obvious that productivity in agriculture will have to grow rapidly to keep up with the demand for food. About 8% of the increase in food production in the last half century has come from the expansion of the cultivated area and 92% came from higher yields per ha. Over this period agricultural technology has produced remarkable responses, with doubling or tripling of yields in a number of crops. The main inputs have been new crop varieties, increased use of fertilizer and improved biocides, together with a large increase in the irrigated area, at a rate of about 3% per annum between 1950 and 1980. Since 1980 the annual rate of increase has declined to about 1%. The total world irrigated area has increased from 80 million ha in 1950 to 237 million ha in 1993.

The importance of irrigated agriculture at the present time can be best illustrated by the fact that the global irrigated area of 20% of the world's cultivated land produces US\$ 104 billion worth of crops, or one-third of the world's food harvested, and that an estimated 46.5% of all grain is produced under irrigation. The irrigated sector in the developing countries, covering a total estimated area of 173 million ha, meets the basic food needs of billions of people, especially in Asia. In addition irrigated agriculture helps to alleviate poverty and unemployment, and maintains low food prices in rural areas and for the urban poor. Despite this excellent record, most irrigated areas in the developing world produce half or less of their potential yield which could be attained with the best management of water and other inputs.

In the developing countries, over the next 30 years another large increase in total food production of around 150% will have to be effected, or from 1.15 to 2.6 billion tons of grain in order to meet estimated food demand. Some of this need could be met by expanding the cultivated rainfed area, but the availability of good new land is now less, and its geographical location is not ideal; in particular, there is limited land available in Asia. The small contribution from increased land area to past yield increases argues that suitable land is not easy to find, and that increasing yield per ha on established fields is more cost-effective. The yield level on rainfed land may often be controlled by available water, which may be inadequate or irregular in supply. The benefits from

additional bought inputs are therefore often low and farmers may be reluctant to invest in them. It is therefore uncertain how far yields on the rainfed lands of the developing world can be increased beyond the present level of 1 to 1.5 tons per ha of cereals.

When in the developed countries all current technologies of fertilizers, water supply, pest control and management are being used in full, the maximum yield for a single crop of cereals is about 10 tons per ha. This output level should be regarded as the limit of full intensification, and this is being quite closely approached in some industrialized countries. In practice the average yields over a large area will always be somewhat smaller than this, and the practical limit for full intensification under irrigated condition is about 8.5 tons per ha for a single crop. In the developing countries similar potential yield levels per year are achievable, from two crops per year and with well controlled growing conditions. However, due to the more difficult and adverse growing conditions in many of the developing countries it is more realistic to assume that at a regional scale on properly managed irrigated land yields of 6 tons per ha per year are obtainable. This level is currently obtained in some parts of the developing world, such as the Punjab and Egypt.

In this discussion we are assuming that the only technologies that will be available are basically those used at present, though clearly there will be improvements. These technologies all have their roots in the 19th century, though their full application has occurred in the 20th. The main discovery of the 20th century - biotechnology - still has to prove itself in practice, and its impact on crop yields may not be felt till well into the 21st century, so it seems unwise to rely upon immediate major breakthroughs.

We argue here that it is essential to move towards full intensification of agriculture in the developing world, taking all possible precautions against the environmental problems that could follow from this. It is only on the irrigated lands that the full potential for crop yield can regularly be approached. Some expansion of the irrigated area may occur (an estimated increase of 1% per year for the coming 30 years), but the rate of increase is declining, and economically viable new sites are becoming difficult to find. At present non-food crops occupy some 20% of the 173 million ha of irrigated land in the developing world. We therefore assume that the irrigated area for cereal production in the developing countries will rise to not more than 192 million ha by 2025.

Our fairly conservative assumption of a yield level of 6 tons per ha per year suggests that irrigated land in the developing countries could supply 1.15 billion tons of cereals by 2025. Adding to this the cereal output of the rainfed area, estimated as 0.65 billion tons, the developing countries will probably be able to produce in the year 2025 a total output of cereals of 1.8 billion tons. This indicates a net deficit of cereals in the developing world in 2025. We do not speculate on how this could be met: possibly average irrigated yields might be higher than this. We simply use this rough calculation to show that there is no room for complacency, but that the need for maximum production from irrigated agriculture at that time will be overwhelming. The same conclusion probably applies to most of the period between 2000 and 2025.

For the irrigated sector to achieve this goal, irrigated agriculture has to become more efficient. All the evidence shows that the main impediment to this is in poor

management of the irrigation system, and that the necessary inputs will largely be wasted until this is corrected. This task is IIMI's duty and opportunity, and it is the main reason for its existence. The Panel points to several other areas of legitimate interest for irrigation management in this report, but the most critical issue is our future food security, at a time when that future is so uncertain.

There are considerable global benefits in concentrating agricultural activity as far as possible within the irrigated area and using this area to its maximum capacity. If all cultivable land on the globe were to be taken into use, it would almost certainly be possible to feed the maximum expected population of the world. However, this would entail the development of areas now in forest or other wild vegetation, with the loss of ecosystems, biodiversity and biogeochemical cycles, which can be more usefully saved for future generations. Sustainability is an issue that should not be looked at in a purely local sense.

The other question is that of the rate of increase in food demand and in food output, which must be kept in approximate balance. It must in principle be easier and quicker to exploit existing facilities fully rather than create new ones. All these arguments thus converge on the conclusion that the improvement of the management of irrigated agriculture is a priority task.

This must happen at the same time that environmental impacts related to irrigation become more serious. Attempts to use larger fractions of available water will increase the danger of salinization. Intensification increases the danger of fertilizer elements and biocides in groundwater. Population pressure on the catchments from which water is drawn will lead to deforestation, poor land use and erosion, with siltation into irrigation systems. The total task facing irrigation research is truly formidable, and this is developed further in the next section.

## **1.2 Research Needs in Irrigated Agriculture**

Evaluations of irrigation projects have emphasized that many perform very poorly, and that most projects are operating well below the potential output used to justify the original investment. There has consequently been a decrease in the rate of expansion of the total irrigated area, due to the overall low economic return on investments in this sector. This is even more so because of the relatively high and rising capital costs for the construction of new irrigation capacity (about US\$ 2,400 per ha in Asia to US\$ 7,200 in Africa for medium-sized systems), and the low market prices of cereals. There is a serious shortage of well-sited, low cost opportunities for expansion of the irrigated area. Work on maximizing cost effectiveness of new systems by innovative irrigation technology is therefore important.

Many of the irrigation schemes which were constructed at the beginning of this century badly need rehabilitation in order to become economically viable again. The main reasons for their present low performance are insufficient funding for recurrent expenditure, and lack of systematic plans for maintenance and management practices. Most governments and donors have recognized that poor maintenance is a major obstacle



to improving water use efficiency and output. The total annual investment in irrigation needed today for infrastructure maintenance is estimated at US\$ 10 to 12 billion. This estimate does not include major costs for important rehabilitation works. Any improved lower-cost methods for maintenance would be extremely valuable, and rehabilitation should be carried out in ways that would minimize subsequent maintenance.

In addition to the poor maintenance, leading to crumbling and leaking canals, ineffective sluice gates, choked and untended watercourses, and inequitable distribution of water, the performance of irrigation systems is also damaged by more general institutional problems. One such problem, especially in large-scale irrigation schemes, is the lack of cooperation between the managers and operators of the water systems and the water users. The management style in most systems is supply-oriented, making water available on fixed schedules, rather than demand-oriented and responsive to the users needs.

The impact of the operation of an irrigation system on the farmers and their families within it is pervasive. A direct consequence of the inefficient and inequitable water distribution in many irrigation schemes is increased social tensions in the farming communities that they serve. Other socioeconomic concerns include the effects of water management on income distribution and tenure, the resettlement of those who are dispossessed by the construction of reservoirs and other irrigation infrastructure, and the effect of the operation of irrigated agriculture on the lives and behaviour of the water users, especially women. A major area of research is to find effective ways in which the water users can be given a much greater influence over the way in which water is distributed and the system is run, as this both increases efficiency and defuses the tensions mentioned above.

Another problem of increasing significance for the irrigation sector is the scarcity of water and the growing demand for water by other sectors of economic activity. In the developing countries irrigation uses 70% of available fresh water, and a large fraction of this water is lost before it is used, either as drainage water in the water courses draining the catchment area of the irrigation system or seeping into the underground and recharging the aquifer system. Overall, it has been estimated that these countries use twice as much water per hectare as the developed countries to achieve crop yields that are only one-third as high. What appears as a water scarcity crisis in many instances is largely a water management crisis. The mismanagement of water has multiple causes and requires a variety of interventions to correct it; these have to be designed by appropriate multidisciplinary research. The very large gap between optimal and current use opens the attractive possibility of simultaneously reducing water use by agriculture and making more of it available to other sectors of the economy, while at the same time increasing the effectiveness of irrigated agriculture as a whole, and thereby improving incomes, equity and sustainability. Understanding these causes of mismanagement and devising solutions to them is IIMI's fundamental mandate.

It is generally recognized that poorly designed, operated or managed irrigation systems lead to major environmental problems, and the importance that is assigned to these is rapidly increasing. The most significant environmental problem is the degradation of the natural resource base, the soil, because this may destroy the whole irrigation system. The most frequent problem of this type is an increase in waterlogging

and soil salinity. Part of the reason for this is the inadequacy and/or the complete absence of a drainage network. Most plans for irrigation works now include some protection against these forms of soil degradation. This adds more than 10% to the cost of new irrigation systems, and thereby makes investments in irrigation projects less attractive when they are appraised using conventional cost-benefit analyses. Where soil salinity has appeared or is threatened there is an urgent need for site-specific research to determine the best way of controlling it.

There are also major problems that are located outside the irrigation system itself, and that greatly widen the scope of irrigation-related research. Careless land use activities in the catchment area of the irrigation system, induced by population pressure and resulting in deforestation, overgrazing, and poor tillage practices, cause soil erosion which can eventually render large areas almost sterile. The eroded soil adds to the silt in dams and canals, and thereby reduces the efficiency and shortens the effective life of the irrigation system. The main 'downstream' concern is on water quality. Saline soils naturally produce saline drainage water, and the increasing use of agrochemicals means that they also will find their way into the drainage unless used with care and expertise.

These effects can damage the quality of water used both for irrigation and for drinking. The long-term impact on water supplies becomes more serious when the agrochemicals seep into the aquifers that provide drinking water for downstream users, because corrective measures are then very difficult. The presence of either salt or agrochemicals can damage ecosystems and biodiversity, especially in fragile wetlands. These problems show that research on production systems has to work together with that on irrigation operation and management, and shows the wisdom of IIMI's new mandate on 'irrigated agriculture'. Further, irrigation can lead to increased health hazards to people living in irrigated areas through the propagation of vector-borne diseases.

Research in irrigation must address all the key problems listed above. Such a broad agenda and such a huge area require the work of many researchers. IIMI needs to identify what subjects and opportunities it can most fruitfully deal with itself, and then put concentrated efforts into building up collaborative teams with high-quality partners to deal with broad issues. The structure, progress and future of IIMI's research is described in Chapter 3; below we discuss the research community within which IIMI must find its partners.

### **1.3 The Irrigation Research Community**

There is a great variety of institutions which contribute to research that promotes improvement of irrigated agriculture. Some carry out research and others fund or coordinate it. They do not presently constitute an integrated community by any means, and there are many interfaces with related communities of parallel disciplines. This subject is developed further in Chapters 7 and 8.

Countries where the irrigated area is relatively limited in extent do not usually have separate irrigation research institutes but rather carry out such research within agricultural research institutes. When there is no separate organization there is a risk that



irrigation-related research will receive low priority and be limited to agronomic aspects. Establishing regional facilities is one means of overcoming such problems, as in the case of CIEH (Comité Interafricain d'Etudes Hydrauliques, based in Burkina Faso). On the other hand, research in countries where there is a separate national irrigation authority is often likely to take a narrow disciplinary view, emphasizing technical and engineering factors more than management ones. The desirable interaction between irrigation and agriculture departments is often absent. Parallel to specialized institutes or departments, some irrigation research may also be carried out by national universities.

In addition to national capacities, numerous international organizations have been engaged with the advancement of irrigated agriculture through research and/or dissemination of information. Some are more focused on irrigation technology issues, such as the International Commission on Irrigation and Drainage (ICID) and the International Programme for Technology Research on Irrigation and Drainage (IPTRID). Their primary concern is to improve the technical performance of irrigation systems. Others touch on specific aspects associated with it, such as the World Health Organization (WHO) concerning health impacts and the United Nations Environment Programme (UNEP) on environmental consequences. Some of the other CGIAR Centres, in particular the International Rice Research Institute (IRRI), the West Africa Rice Development Association (WARDA), the Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT) and the International Food Policy Research Institute (IFPRI) are also working on problems of irrigated agriculture.

The main UN interest in irrigation research and technical assistance comes from FAO, in which the Land and Water Development Division deals with irrigation and drainage, and various other division are concerned directly or incidentally with irrigated agriculture. The Water Resources and Management Service of the Division prepares guidelines on irrigation and drainage technology.

Another important set of research contributors includes the universities and research institutions in the developed countries, that provide training and conduct fundamental and applied research on technological, socioeconomic, operational, managerial and environmental aspects of both rainfed and irrigated agriculture. In these institutions, training and research tend to follow disciplinary lines, with some institutions having now adopted a more multidisciplinary approach.

Given the enormous size of the financial resources invested in the establishment of the irrigation infrastructure, and the large amounts which are annually needed to keep the irrigation schemes operational, the world is not investing sufficiently in irrigation research. Total annual expenditure on irrigation and drainage research probably does not exceed US\$ 130 million a year. This is slightly more than 1% of the annual investment in irrigation and drainage, and probably less than 0.1% of the total value of produce grown each year on irrigated land in developing countries. The total expenditure on irrigation and drainage research in the developing countries amounts to only US\$ 80 million per year, and the actual expenditure ranges from US\$ 0.1 to 1.5 per irrigated ha. It is difficult to justify this low level of activity in the light of the needs outlined here.

## CHAPTER 2 - CREATION AND EVOLUTION OF IIMI

### 2.1 Origin and Creation of IIMI

Two events in 1969 began the 15-year process that established IIMI. The first was a Bellagio Group proposal that stressed the importance of water management in agricultural development. The second was a joint proposal by the Ford and Rockefeller Foundations that recommended establishing an international centre to carry out multidisciplinary research on irrigation technologies, the economics of water management at national and farmer levels, and water policy issues at national and international levels.

Water management and irrigation issues surfaced repeatedly on the TAC agenda between 1971 and 1978, and a series of reports and discussion papers were commissioned. In 1979 TAC presented its third priorities paper to the Bellagio Group. Water management research was second on the list of initiatives proposed when additional funding became available. In 1980, following an IDRC-sponsored study, TAC submitted a draft proposal on water management to the CGIAR, which then commissioned a further study to generate alternative proposals. In 1982 the study team recommended to TAC that an International Irrigation Management Institute be established and funded by the CGIAR.

At its May 1982 meeting the CGIAR concluded that it would be financially inappropriate to add to the 13 Centres already funded, and did not endorse the recommendation. Instead, it encouraged interested members to explore the establishment of a centre along the lines recommended by TAC and mobilize new funds for this. This group of interested members initiated the formulation of a Support Group of 14 potential donors. The Support Group met in Washington D.C. in October 1982 and decided to establish and support IIMI as an independent international organization. Executive action to establish the Institute was entrusted to the Ford Foundation which sought a location for the Institute's headquarters, considering India, Sri Lanka and Pakistan. After an approach to India failed to produce an agreement, a decision was made to accept the invitation of Sri Lanka and to establish the headquarters of the Institute at Digana Village, built for the construction staff of the Victoria Dam and then being vacated. IIMI partially occupied the village in mid-1984 and expanded its occupation during 1985, beginning operations early that year. Control of the newly formed IIMI passed to the Institute itself in January 1985. It took over the management of the services and facilities at Digana Village from March 1986. IIMI moved to Colombo in 1989 and to present headquarters in 1992.

### 2.2 Evolution of IIMI

IIMI's evolution may be divided into two phases. In the first phase, from June 1984 to December 1990, IIMI operated outside the CGIAR System, and received its funding from a Support Group of donors. The second phase began in January 1991 when IIMI joined the CGIAR System.

IIMI's Charter, which came into effect in 1984, stated that the specific objectives of the Institute were to develop methods, devices, procedures, practices and operational approaches to: (a) optimize the effectiveness of water use for agricultural production; (b) ensure dependability and equity in the distribution of the benefits of irrigation; (c) evaluate and improve the management and performance of irrigation systems; (d) protect, maintain and improve the quality of irrigated soil and the environment in areas affected by irrigation systems, as well as health, and the general welfare and quality of life in rural agricultural communities; and (e) improve the reliability of water supply, thus reducing the risk to investments in yield-increasing inputs, and to share and disseminate information thereof among potential user groups, organizations and other bodies and persons concerned with irrigations.

Although in its early years IIMI did not have a formal mission statement to guide its work within the broad framework of its Charter, IIMI interpreted its specific mission to be: *"to strengthen national efforts to make more productive use of irrigation systems"*. In 1988, IIMI's Board approved a formal mission statement that gave the Institute's purpose as: *"to strengthen national efforts to improve and sustain the performance of irrigation systems in developing countries through the development and dissemination of management innovations"*.

Initial activities took place within a handful of relatively nearby countries in Asia, and later expanded into Africa. Field offices with residential staff were established in Sri Lanka (1984), Nepal (1985), Philippines (1985-93), Indonesia (1986-89), Pakistan (1986), Bangladesh (1988), Burkina Faso (1988), Sudan (1989), Morocco (1989-93), Niger (1991) and Nigeria (1991). Given the mission in 1984 and the nature of available bilateral funding, IIMI's programme during the first phase evolved largely on a country and project basis, with specific emphasis on strengthening irrigation management capacity at the national level.

### **2.2.1 The CGIAR Involvement**

The combined impact of increasing population pressure and resource degradation, and the low productivity of irrigation systems, highlighted the need for a broadening of the emphasis in internationally supported research to give greater weight to issues of natural resources conservation and management.

In May 1988, at the CGIAR Mid-Term Meeting in Berlin the Group discussed the work of ten so called "non-associated centres" including IIMI, and asked TAC to undertake an examination of a possible expansion of the CGIAR System. At the Mid-Term Meeting in Canberra in May 1989, the CGIAR members agreed on a "Declaration of Intent on the Future Work of the CGIAR" in which they stressed "the evident and urgent need to investigate the significant research issues of natural resources management for sustained food production". The research needs in this area were considered to include the development of principles and methods for management of water resources for irrigation systems.

### **2.2.2 Justification for IIMI's Entry into the CGIAR System at the Time of the 1990 Debate on the Possible Expansion of the CGIAR**

TAC, in its analysis, recognized the critical role played by irrigation in agricultural production in developing countries, and particularly in Asia. It was considered that greater benefits would flow if scarce irrigation water resources were more efficiently managed. TAC further considered that the training of personnel responsible for the management of irrigation systems and strengthening of the institutions responsible for irrigation management and research must be given high priority. In particular, research on socioeconomic aspects of irrigation management was considered to be critically important. Research was also needed on the policy of irrigation development and the role of irrigation development in food production.

TAC noted that some CGIAR Centres, e.g., IRRI, CIMMYT and WARDA, have some work in the area of water management. Also, IFPRI had conducted research to analyze the role of irrigation in relation to food policy. However, the organization and management of irrigation systems was not covered. TAC found that IIMI was filling a significant gap in the subject matter coverage within the CGIAR System and that its work complemented rather than duplicated the work of several other IARCs. TAC noted that IIMI operated largely through a series of country projects but that this was necessary in order to undertake research on the organization and management of irrigation systems. TAC considered that IIMI's mission as then defined "to strengthen national efforts to improve and sustain the performance of irrigation systems in developing countries, through the development and dissemination of management innovations" conformed more with that of ISNAR than with those of the commodity Centres in the CGIAR.

In considering the case for the admission of IIMI to the CGIAR, TAC noted that the term "irrigation management" as used by IIMI was a substantially different concept from those such as "soil and water management", sometimes referred to as "factor" research. Accordingly, TAC did not see IIMI as an institute working on a single factor of production to any greater or lesser extent than it might view ISNAR in this way. Consequently, in TAC's evolving terminology, IIMI was regarded, along with ISNAR and IFPRI, as a "subject matter" centre.

TAC also noted that there was little research in these areas outside the IIMI programmes, and as in the case of ISNAR, IIMI's role was not one that could readily be subsumed within the portfolios of existing CGIAR Centres. It required a different set of disciplines and a different paradigm. It was the combination of these considerations that justified admission of IIMI into the CGIAR System.

### **2.2.3 TAC's Recommendations on CGIAR Priorities and Strategies in Public Management Research**

TAC noted that the concern about the ineffectiveness and inefficiency of public sector organizations had spawned substantial programmes of research on this problem. In the CGIAR context, research in this field needed to underpin the strengthening of national research systems and to improve the management of common property resources such as



irrigation. Research was needed on the policy context of national research and on the organization and management of national research systems.

In terms of agricultural productivity, irrigation water was undoubtedly the most important common property resource. Poor management of irrigation systems by government and farmer organizations leads to considerable wastage and the inequitable distribution of water. Field research was needed to diagnose constraints to effective irrigation management and to develop management innovations to overcome the problems. TAC believed that some of the principles developed from research on the organization and management of irrigation systems may be applicable to other common property resources under public or communal management, such as wastelands and some types of rainfed farming.

Several CGIAR Centres were currently involved in different aspects of water management research. While research on irrigation management was addressed mainly by IIMI, important aspects of irrigated cropping systems in Asia, Africa and WANA are included in the work of IRRI, WARDA, CIMMYT and ICARDA. Similar research is likely to be needed on irrigated agriculture in Latin America. However, there was a need to study the efficiency with which increasingly scarce irrigation water is used for crop production along with resource degradation issues such as salinization and waterlogging. Also, several Centres, through cooperative arrangements with external agencies, have found the need to take into account watershed management, human health and downstream environmental considerations related to irrigated and wetland farming systems. TAC concluded that there was a need to bring all these different elements together through an inter-centre programme so that the capacities and interests that already exist in other CGIAR Centres, including CIAT, CIFOR and ICLARM can be integrated.

### **2.3 IIMI's Current Strategy**

Joining the CGIAR System led to a number of programmatic, administrative and financial changes. The most significant change resulted from a closer identification with the overall mission of the CGIAR, a broadening of the Institute's early focus from "irrigation systems" to "irrigated agriculture", and a move away from being project-driven to programmes-based planning and project implementation. The new focus and mode of operation is reflected in IIMI's draft strategy document: "Improving the Performance of Irrigated Agriculture: IIMI's Strategy for the 1990s".

IIMI's Strategy is a response to two of the world's major problems: the expanding food needs in developing nations, and the competing demands for limited freshwater resources. IIMI believes that the answer lies in improved irrigation management, better policies and more intensive use of existing irrigated areas which would allow irrigation schemes to operate close to full potentials. Further, IIMI considers that while improvements in irrigation policies and management are a precondition for meeting future food requirements, they must be accompanied by many forms of technological advances, including improved crop varieties and production methods.

### 2.3.1 IIMI's Mission and Goals

In its current strategy, IIMI defines its mission as being: *"to foster the development, dissemination and adoption of lasting improvements in the performance of irrigated agriculture in developing countries"*.

IIMI sees its broad mission being achieved through three specific goals: *generating knowledge to improve management and policy-making; strengthening national research capacity in irrigation management; and supporting the introduction of improved management and policy-making*.

To achieve these goals, IIMI has identified two main sets of activities: research and institutional strengthening. Each is supposed to contribute to a lesser or greater extent to each of the three goals, although research contributes mainly to IIMI's first goal, while institutional strengthening activities contribute more to the second and third goals.

### 2.3.2 Programme Structure and Approach

IIMI recognizes that there is a large number of organizations in the world carrying out research on irrigation, and considers this to be very appropriate because the subject is vast and complex, and IIMI by itself could never hope to address all the important research issues. As an international institution, IIMI expects to play a global leadership role in maintaining a "watching brief" on significant development worldwide, encouraging the work of others, helping to make information on important innovations available, and maximizing synergy among key research organizations. For the period of the 1994-98 Medium-Term Plan, IIMI will address a selected set of research issues in which it has an advantage over other organizations, and which it believes will have a significant positive impact on irrigated agriculture. These issues are grouped in five research programmes: (i) assessing and improving the performance of irrigated agriculture; (ii) sector-level management of irrigated agriculture; (iii) improving public irrigation organizations; (iv) toward the local management of irrigation systems; (v) sustainable management of water delivery and disposal.

IIMI has also identified four cross-cutting research themes: environment and health; choice and use of technology; gender issues; and improving global database on irrigated agriculture.

IIMI's institution strengthening objectives are addressed through four sets of activities: (i) organizational development activities; (ii) professional development activities; (iii) information dissemination activities; (iv) information networks.

According to the 1994-98 Medium-Term Plan (MTP), the Institute's core programme will focus on research and institution building activities that are designed to generate transnational rather than country specific results. The complementary programme will be made up of country-specific projects. IIMI has developed a concept of core add-on projects (CAPs). These are core funded projects attached to country specific collaborative research projects to allow the Institute to generalize from country-



specific projects, and thus contribute to the generic core programme. By 1998, core and complementary activities would be of equal importance. The regional allocation of core resources would take into account the distribution of the areas under irrigation, i.e. 76% for Asia, 12% for WANA, 3% for Sub-Saharan Africa (SSA), and 9% for Latin America.

In assessing IIMI's MTP proposals, TAC expressed concerns about the issue of programme focus with respect to the broadened mission, and critical mass, particularly with respect to sector management and public organizations programmes for which only two core SSY (senior staff years) had been allocated. TAC also noted that the high proportion of complementary activities, in relatively few countries, presented a major challenge to IIMI in ensuring effective support to its generic research and institution building activities.

TAC recommended that IIMI be assigned core resources for 1998 of US\$ 7.6 million (in 1992 dollars). At this level, the estimated total manpower allocation for core research and research related activities would be 12.5 SSY in 1994 rising to 13.75 SSY in 1998. In 1994, the proposed manpower distribution by core programme would be 5 SSY, 1 SSY, 1 SSY, 3 SSY and 2.5 SSY for the performance, sector management, public organizations, local management, and water management programmes respectively. Over the MTP period, training, information and documentation would account for 4 SSY per year. The balance of core effort among five categories of TAC defined activities in 1998 would be 38% for natural resources conservation and management, 45% for socioeconomics, public policy and public management research, and 17% for institution building. Corresponding figures for the balance of complementary effort in 1998 would be 38%, 42% and 20% respectively.

TAC also identified IIMI as the convening centre for a proposed Systemwide initiative on water management research covering inter-centre cooperation in irrigated cropping systems research, including watershed management, human health issues in irrigated areas, and downstream environmental problems created by irrigated agriculture.

## 2.4 IIMI Today

The 1994-98 MTP developed by IIMI and approved by TAC in October 1993 serves as the basis for IIMI's programmatic efforts. IIMI's research activities constitute about two-thirds of its total expenditures - a proportion that has grown slightly with the growth of resources, as shown below in Table 2.1. The projected operating budget (net of transfer to reserves) for 1994, however, is currently US\$ 8.8 million, a decline of about 8.6% from the 1993 expenditure level and below the MTP-approved level for 1994 of US\$ 13.4 million (in nominal dollars). This represents a drop of 25.6% in nominal dollars from the expectations in the MTP.

Unlike most CGIAR Centres, the downturn in funding is quite recent for IIMI. IIMI's funding level had increased steadily from approximately US\$ 1.0 million in 1984 to close to US\$ 10 million in 1993 by a compound rate of about 26%. The Institute achieved this by enlisting new donors and attracting additional support from its

"traditional" donors (see Section 7.5). Since 1991, when IIMI joined the CGIAR, its core unrestricted funding has continued to rise while core restricted funding began to decline (in 1992), as shown in Table 2.2. While unrestricted resources are increasing in absolute and proportional terms, they still account for only about one third of IIMI's total funds, whereas for the more established CGIAR Centres the proportion is closer to two thirds.

**Table 2.1 Breakdown of IIMI's Total Expenditure (Including Capital) - 1989-93**

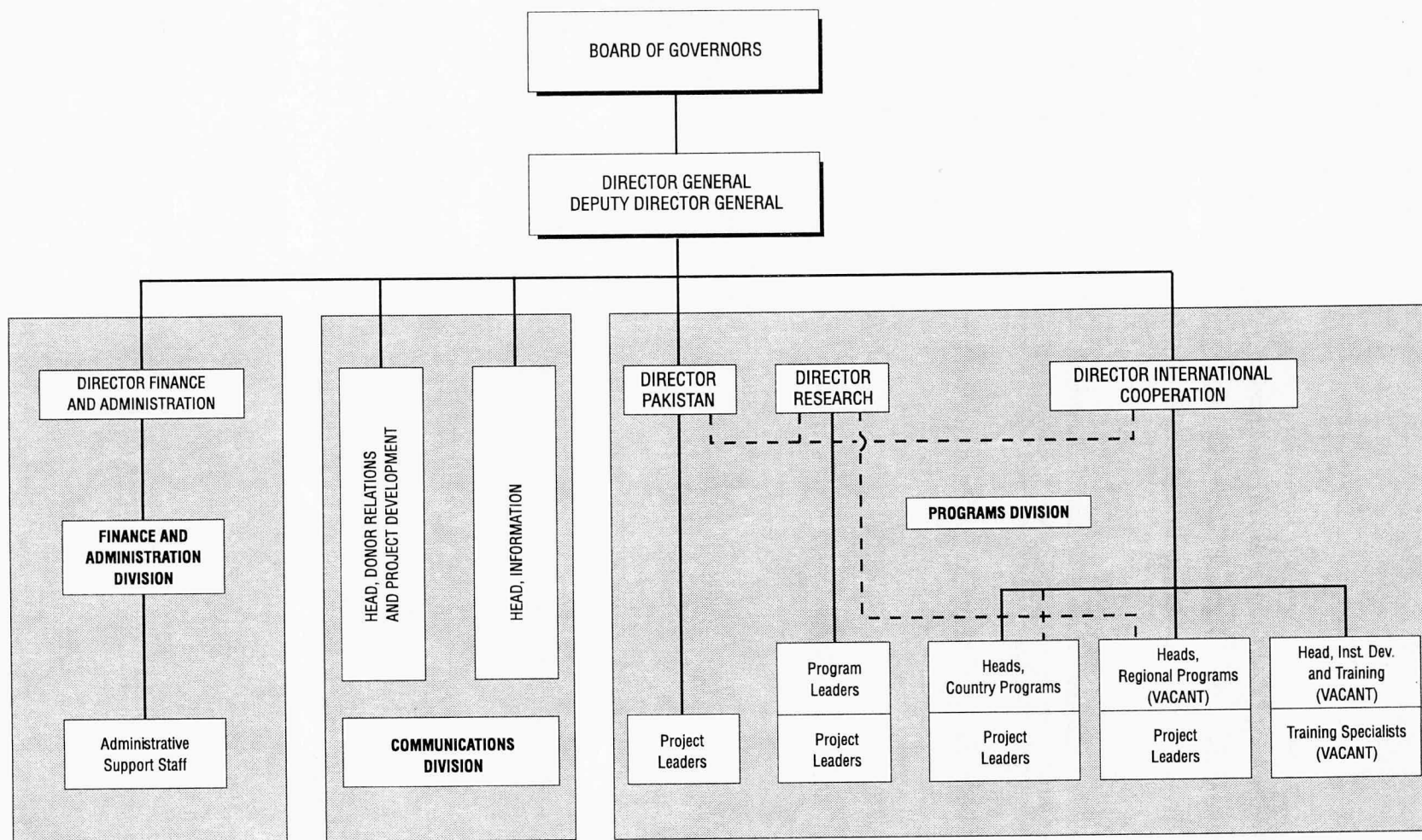
	1989		1990		1991		1992		1993 Projected	
	US\$	%	US\$	%	US\$	%	US\$	%	US\$	%
Research	3,854,256	61	4,254,666	63	5,619,992	66	5,928,381	65	6,433,968	67
Research Support	562,470	9	677,804	10	704,040	8	856,534	9	816,600	9
Information	346,000	5	385,755	6	539,683	6	474,008	5	455,500	5
Governance	475,000	7	624,584	9	582,484	7	704,310	8	900,900	9
Finance & Administration	649,392	10	736,790	11	619,850	7	867,248	10	723,800	8
Other Administration	461,000	7	81,749	1	441,726	5	257,392	3	264,500	3
<b>Total Expenditure</b>	<b>6,348,118</b>	<b>100</b>	<b>6,761,348</b>	<b>100</b>	<b>8,507,775</b>	<b>100</b>	<b>9,087,873</b>	<b>100</b>	<b>9,595,268</b>	<b>100</b>

**Table 2.2 Type of Funding - 1989-93**

Year	Core Unrestricted	Core Restricted	Non-core or Special Project	Total
1989	1,744,929	1,448,179	2,690,435	5,883,543
1990	1,903,505	1,588,572	2,741,261	6,233,338
1991	1,899,395	4,071,107	2,075,657	8,046,159
1992	2,725,941	3,765,637	2,636,368	9,127,946
1993	3,342,397	2,808,074	3,738,503	9,888,974

The staff who carry out IIMI's work are organized as shown in Figure 2.1. The structure is made up of three broad components - Programmes, Communications, Finance and Administration - reporting to the Director General (DG). The DG is assisted by a Deputy Director General (DDG) and four Directors (Research, International Cooperation, Pakistan, Finance and Administration), and is discussed in Section 5.2.

Figure 2.1 IIMI Organizational Chart — December 1993



In terms of staffing, the total number has increased by 36% from 1989 to 1993, with an increase of 23% (from 31 to 38) in international staff. In 1993, there were 19 international staff based at Headquarters (HQ) and 19 in eight field offices, most of whom were in Pakistan (7) and in Sri Lanka (4). Of the 33 Programme staff, 18 had a background in engineering, 5 in economics, 7 in social sciences, 2 in management, and 1 in agricultural science. Staffing patterns are presented in Table 2.3, and are discussed further in Section 6.1.2.

In 1994, retrenchment of staff is anticipated. Responding to the recent decline in total funding, in December 1993 the Board approved a 1994 budget that required a reduction in personnel costs. As a result, the DG has announced a proposal for staff reductions, expected to affect about 10% of national and international staff.

## **2.5 The 1990 Donor-Sponsored Review of IIMI and the Centre's Response**

IIMI's first external review was commissioned by the IIMI Support Group. The panel made five programme-related recommendations, and six management-related recommendations. The programme-related recommendations covered the following areas: narrowing of research themes; over-extension of IIMI's activities; quality control; communications with personnel in collaborative agencies and those involved in policy making; and gender issues in irrigated agriculture. The management-related recommendations covered the following areas: Pakistan; legal status and governance; organizational structure; indirect costs; project budget and staff orientation; and position classification system.

IIMI's actions in response to the recommendations, are tabulated in Appendix VI, together with Panel's remarks and implementation scores. According to the assessment by the Panel, IIMI has implemented 5 recommendations in full, and 6 recommendations partially. The Panel comments on IIMI's actions in the appropriate sections of this Report.

**Table 2.3 Total Staff Strength - International and National Staff - 1989 and 1993**

	Research		Research Support		Information		Governance	Fin. & Admin.		Sub Total		
	HQ	Field	HQ	Field	HQ	Field	HQ	HQ	Field	HQ	Field	TOTAL
1989												
International Directors and above	-	1	2	-	-	-	1	1	-	4	1	5
Other International Staff*	7	17	1	-	1	-	-	-	-	9	17	26
National Professionals	30	16	-	3	4	1	-	9	8	43	28	71
National General	15	40	-	64	9	-	5	57	-	86	104	190
TOTAL	52	74	3	67	14	1	6	67	8	142	150	292
1993												
International Directors and above	-	1	2	-			2	1	-	5	1	6
Other International Staff*	12	18	1	-	1	-	-	-	-	14	18	32
National Professionals	19	42	-	31	15	1	2	11	11	47	85	132
National General	12	30	-	114	9	-	5	56	-	82	144	226
TOTAL	43	91	3	145	25	1	9	68	11	148	248	396

\* Three associate experts are included in the International "Research" staff in 1989, and 6 in 1993 (3 are in Headquarters and 3 in Pakistan).



## CHAPTER 3 - RESEARCH PROGRAMME

The 1994-98 Medium-Term Plan reorganized IIMI's research into five programmes - assessing and improving the performance of irrigated agriculture, sector-level management of irrigated agriculture, improving public irrigation organizations, toward the local management of irrigation systems, and sustainable management of water delivery and disposal - with four cross-cutting themes - gender issues, health and environmental issues related to irrigation, choice and use of technology, and improving the global database on irrigated agriculture. Research achievements, since the establishment of IIMI in 1984, have been regrouped into these five programme areas. Country-specific research in the 14 countries where IIMI was or is present has in most cases been conducted without formal connection with the research programmes or the cross-cutting themes. That part of country research which is not directly identifiable with research programmes is reviewed in Chapter 4, as it in general relates more closely to institutional strengthening activities.

### 3.1 Overall Considerations on Irrigation Management Research

Irrigation management research has particular characteristics which determine the research strategy to be followed. The subject of inquiry is the performance of complex systems and organizations, so research generally needs to be conducted with operating agencies and in general through action research, in which researchers observe the impact on performance of changes in management practices. This implies making research supportive of development objectives, which complicates the research methodology. The approach, however, offers the advantage that the process of research itself provides institutional strengthening and training, and thus enhances the chances of adoption of the recommendations derived from the research. The fundamental linkages between the management of irrigated agriculture and the vital biophysical base - e.g., in hydrology, agronomy, soil erosion, and soil salinity - imply that the research is multidisciplinary and that data collection is difficult and must often be sustained over long periods of time. Despite the difficulty of this approach to irrigation management research, criteria are available to assess research performance (see Chapter 5).

IIMI's methodological approach to irrigation management research thus requires significant direct involvement with operating irrigation systems, in part because this is IIMI's source of information and its laboratory, in part because lack of local skills prevents effective delegation of field research to local agencies and professionals in most countries where it works, and in part because its mandate gives IIMI developmental goals that go beyond those of other CGIAR Centres. Strategic research may thus be achieved by drawing generic lessons from many field action research projects. For IIMI, this is both a unique source of advantage in research, and a source of difficulties in organizing strategic research. Success requires the formulation of rigorous hypotheses, systematic data collection, and the use of research methods that will subsequently allow comparative analysis. For this purpose, the use of relevant theory is essential. Success also requires that headquarters research programmes, country research, institutional strengthening



activities, and assistance in the introduction of improved irrigation management and policy making practices be integrated into a coherent overall programme.

Strategic research may also be conducted by devising new approaches to answer management and policy questions which can be analyzed in a single location. In that sense, not all strategic research in irrigation management is based on inter-site comparisons and generalizations. This latter type of research can be implemented in locations without critical mass of research staff and without multi-site projects. This suggests a three-pronged geographical strategy, with concentration of a critical mass of research in a few selected countries, organization of multi-country projects targeted at well defined research questions, and single-site development of new scientific approaches.

### **3.2 Observations and Recommendations Made in Previous Reviews**

Similar recommendations to those made by this Review Panel have already been made in previous external reviews. Our Report recognizes many of the same gaps in research performance which were noted before, suggesting that the response to the earlier recommendations may not have been effective (see Appendix VI). Some of these lingering observations and recommendations are the following:

#### **3.2.1 1987 Review Mission**

- Lack of clarity and specificity of objectives. Need to make sharper choices of priorities, with critical mass of resources for each choice and location.
- Problem of quality control: recommend use of an external panel of experts.
- Weak headquarters supervision of country projects.

#### **3.2.2 1990 External Programme and Management Review**

- Need to make sharper choices of priorities with critical mass and sustained presence in the chosen sites, i.e., not overextending programmes either geographically or in size.
- Need to strengthen quality control mechanisms: recommend expert reviews and use of special panels of experts.
- Need to increase communications with collaborating agencies and with local irrigation officials and policy makers.
- Need to consider the role and welfare of women.
- Need to be continually watchful of not following the path of a consulting firm.

### 3.3 Review of the Research Programme

IIMI's five research programmes are reviewed, as currently defined in the MTP. All core (unrestricted and restricted) funded projects are assigned to one of these five programmes. Their total 1994 budget is US\$ 2,386,000. There are additionally 17 country projects with a complementary budget of US\$ 2,887,000 and 7 Pakistan projects with a complementary budget of US\$ 536,000 which are not directly identifiable with the research programmes, although some have direct linkages to one or more of the programmes. Table 3.1 gives the list of these projects with their sources and levels of funding, and the country location, and Table 3.2 gives staff allocation across programmes. In what follows, we have grouped publications in three categories: scholarly publications (journal articles and in-house monographs and research papers), proceedings (books of conference proceedings and chapters in proceedings), and in-house country and working papers.

#### 3.3.1 Programme 1: Assessing and Improving the Performance of Irrigated Agriculture (in 1994: 36.6 research staff, a core budget of US\$ 630,000, and 7 core projects)

The main objective of this programme is to develop a conceptual framework and a set of indicators for assessing the performance of irrigated agriculture in terms of efficiency, equity, welfare, and sustainability. Work in this area has been done collaboratively with IFPRI for the design of indicators which address agricultural performance and socioeconomic effects, and with ICID, ILRI (International Institute for Land Reclamation and Improvement), and IHE (International Institute for Infrastructural, Hydraulic and Environmental Engineering) for the development of indicators which characterize hydraulic performance. The results have been published in 11 scholarly publications, 16 proceedings, and 14 country and working papers.

This research aims at providing irrigation managers and sector policy makers with tools to assess quantitatively the performance of irrigation systems and to monitor the impact on performance of changes in the water delivery system, the organizational structure, and the policy framework. It has done this by: (1) adapting indicators taken from other fields to the subject of water management in developing countries and systematizing them in a nested hierarchy of indicators, running from the irrigation system to the politico-economic system; (2) developing more systematic links between the physical and non-physical aspects which affect the performance of irrigated agriculture. A comparative analysis of performance indicators, using irrigation systems spread over different agroclimatic regions and management systems is in progress. Today, there are recorded examples of use of these performance indicators in several countries, among them Indonesia, Nepal, Sri Lanka, Pakistan, India, and Malaysia.

**Table 3.1 1994 Budget Allocation and General Features by Research Themes and Country Projects****Programme 1: Assessing and Improving the Performance of Irrigated Agriculture**

	Project	Status	Budget Res.Core	Budget UR Core	Budget Compl.*	Total	Donor	Country
1.	Performance - Coordination	1	82,000	77,000		159,000	Japan Gov.	
2.	Performance Assessment and Evaluation of Management Interventions - An Action Research Study for MUDA Irrigation Scheme in Malaysia	1	85,000	88,000		173,000	Japan Gov.	Malaysia
3.	Assessing and Improving Irrigation Management Performance in Selected Systems - Morocco	1	105,000			105,000	Neth. Gov.	Morocco
4.	Assessing and Improving Irrigation Management Performance in Selected Systems - Argentina	1	26,000	45,000		71,000	Neth. Gov.	Argentina
5.	Socio-Economic Impacts of Improved Irrigation Management Performance	1	7,000			7,000	Japan Gov.	Sri Lanka
6.	Testing Performance Assessment Indicators in Mahi-Kadana System - Gujarat, India	1 1	29,000 13,000			29,000 13,000	Japan Gov. Neth. Gov.	India India
7.	Current Practices in Irrigation Performance Assessment: A Review of Experiences in Pakistan	1 1	35,000 15,000	23,000		35,000 38,000	Japan Gov. Neth. Gov.	Pakistan Pakistan
	<b>TOTAL</b>		397,000	233,000	0	630,000		

**Programme 3: Improving Public Irrigation Organization**

	Project	Status	Budget Res.Core	Budget UR Core	Budget Compl.*	Total	Donor	Country
1.	Improving Public Irr. Organizations	1		185,000		185,000		
	<b>TOTAL</b>		0	185,000	0	185,000		

**Programme 4: Toward Local Management of Irrigation Systems**

	Project	Status	Budget Res.Core	Budget UR Core	Budget Compl.*	Total	Donor	Country
1.	Potential for Water Markets Development in Pakistan	1		30,000		30,000		Pakistan
2.	Gender issues and Irr. Management	1	64,000			64,000	Neth. Gov.	Sri Lanka/ Burkina Faso/Nepal
3.	Privatization and Self Management	1	240,000			240,000	Germany	
4.	Colombia Basin Follow-up	1	5,000			5,000	Germany	Colombia
5.	Participatory Management Study	1	13,000			13,000	Germany	Sri Lanka
6.	China Case Study - Changing Patterns of Irrigation Management in North China	1	5,000			5,000	Germany	China
7.	Irrigation Management Turnover in India	1	64,000			64,000	Germany	India
8.	Sudan Privatization Study	1	20,000			20,000	Germany	Sudan
9.	Irrigation Management Transfer Conference - Wuhan, China	1 3	108,000 86,000			108,000 86,000	GER/FF FF/FAO	China China
10.	Programme of Support Systems for Local Management	3	118,000			118,000	Germany	
11.	TARC/IIMI Studies at Thirappane	1		20,000		20,000		Sri Lanka
12.	Latin America Programme - Phase II	1	63,000			63,000	FF	LAC
13.	Latin America Programme	3	71,000			71,000	IDB	LAC
	<b>TOTAL</b>		857,000	50,000	0	907,000		

\* Compl. = Complementary

Status 3 grants are discounted by 33%

Status 4 grants are discounted by 50%

Note: Programme 2 is not functional

**Programme 5: Sustainable Management of Water Delivery and Disposal**

	Project	Status	Budget Res. Core	Budget UR Core	Budget Compl.*	Total	Donor	Country
1.	Water Management Base Project	1		60,000		60,000		
2.	Research on Irrigation and Drainage Technology	1	60,000	44,000		104,000	Germany	
3.	Research on Irrigation and Drainage Technology	4	72,000			72,000	Germany	
4.	Canal Operations	1		43,000		43,000		Sri Lanka
5.	Research component/Fordwah	1		20,000		20,000		Pakistan
6.	Environment Programme	1		14,000		14,000		
7.	Health Programme	1	51,000			51,000	DANIDA	
8.	Africa Programme	A	159,000			159,000	AfDB	
9.	Water and Environment in Asia	3	65,000			65,000	IDRC	
10	WANA Programme	4	76,000			76,000	IFAD	Sudan/Pak
TOTAL			483,000	181,000	0	664,000		

**Country Projects**

	Projects	Status	Budget Res. Core	Budget UR Core	Budget Compl.*	Total	Donor	Country
Bangladesh:								
1.	Research and Training on Irrigation Management	1			83,000	83,000	FF	Bangladesh
2.	Privatization of Minor Irrigation	1			188,000	188,000	ADB	Bangladesh
India:								
3.	M&E of Irrigation Management Turnover in India	3			82,000	82,000	FF	India
4.	National Water Management Project	3			173,000	173,000	WB	India
Nepal:								
5.	Water Rights and APP Project	3			76,000	76,000	FF	Nepal
Sri Lanka:								
6.	TA for Participatory Management of Irrigation Systems	1			132,000	132,000	ADB	Sri Lanka
7.	National Irrigation Rehabilitation Project	1			282,000	282,000	EC	Sri Lanka
8.	Shared Control of Natural Resources	1			897,000	897,000	USAID	Sri Lanka
9.	KOISP Evaluation	1			94,000	94,000	GOSL	Sri Lanka
10	Irrigation Management and Crop Diversification	1			22,000	22,000	ADB	Sri Lanka
11	TARC Project	1			10,000	10,000	TARC	Sri Lanka
Burkina Faso:								
12	Improvement of Irrigation Performance	1			160,000	160,000	AfDB	B. Faso
Niger:								
13	Irrigation Management Development in the Niger River Valley	1			187,000	187,000	AfDB	Niger
Nigeria:								
14	Joint Management of Irrigation System - Phase II	1			80,000	80,000	FF	Nigeria
15	Support to WUAs	3			151,000	151,000	WB	Nigeria
Sudan:								
16	Supplementary Programme Support	1			118,000	118,000	FF	Sudan
17	Latin America Programme	1			152,000	152,000	FF	Mexico
TOTAL			0	0	2,887,000	2,887,000		

**Pakistan Group**

	Project	Status	Budget Res.Core	Budget UR Core	Budget Compl.*	Total	Donor	Country
1.	Direction	1		109,000		109,000		
2.	Crop Based Irrigation	1			131,400	131,400	ADB	Pakistan
3.	Waterlogging & Salinity - Phase II	3			132,000	132,000	Neth. Gov.	Pakistan
4.	Pehur High Level Canal	3			20,100	20,100	ADB	Pakistan
5.	LBOD Project	4			33,000	33,000	WB	Pakistan
6.	Fordwah Eastern Saddqiya	4			17,500	17,500	WB	Pakistan
7.	Sailaba Irrigation	4			93,000	93,000	IFAD	Pakistan
TOTAL			0	109,000	427,000	536,000		

Status 3 grants are discounted by 33%

Status 4 grants are discounted by 50%

**Table 3.2 Research Staff at Headquarters and Field by Programme**

Staff Category	Programme					Total
	1	2	3	4	5	
Headquarters						
International Staff	3.5	0.0	1.0	4.0	3.5	12.0
National Professionals	2.5	0.0	0.0	8.0	1.5	12.0
National General	3.0	0.0	1.5	4.0	3.5	12.0
Field*						
International Staff	5.1	0.0	3.7	4.1	5.1	18.0
National Professionals	14.5	0.0	6.0	10.0	18.5	49.0
National General	8.0	0.0	4.7	9.3	8.0	30.0
Total	36.6	0.0	16.9	39.4	40.1	133.0

Legend: Programme 1: Assessing and improving the performance of irrigated agriculture

Programme 2: Sector-level management of irrigated agriculture

Programme 3: Improving public irrigation organization

Programme 4: Toward local management of irrigation systems

Programme 5: Sustainable management of water delivery and disposal

\* Country programme staff are not assigned by programme area, but normally work on a number of programme areas depending upon project requirements

In the past, most of IIMI's efforts were limited to reviews, comparisons, and evaluations of other peoples' work, and the conduct of performance case studies in a range of physical and institutional environments. Present and future activities aim at providing, in the next five years, a field-tested, comprehensive and workable set of performance indicators. This will be pursued on several sites through action in-depth work, including surveys of households and organizations. At the same time, these surveys will be used to test a variety of hypotheses on the determinants of performance such as the roles of tertiary development of canals and roads, rotational water delivery schemes, management information and decision support systems, and various forms of decentralization and user participation.

As research progresses with performance studies, understanding the linkages between water delivery, farming systems, farmers' responses, and agricultural output will become more important. Since behaviour mediates the relationship between system design, management, and policy changes on the one hand and changes in performance indicators on the other hand, focusing more explicitly on response of rural households, farmers and communities will be important.



### **3.3.2 Programme 2: Sector-Level Management of Irrigated Agriculture (in 1994: zero research staff, zero core budget, and zero projects)**

This programme focuses on the broader issues pertaining to sectoral policy toward irrigated agriculture. It included projects on the impact of alternative financing mechanisms on the performance of irrigated agriculture, priorities for public investment, and the development of methods for the participatory formulation of sectoral policy toward irrigated agriculture. This programme is relatively new and has only published 8 scholarly publications, 13 proceedings, and 2 country and working papers.

Research analyzed the performance of irrigation agencies across a large number of locations to identify the impact of payment of user fees on the performance of these organizations. It arrived at the important conclusion that, when these agencies are at least partially financially autonomous and dependent on user fees for their operating revenues, the payment of fees leads not only to greater availability of resources for O&M (operation and management), but more importantly to greater accountability to users and hence to sharply improved performance. This is an important research contribution which has circulated worldwide in well distributed publications and offers useful recommendations to policy makers and agency managers. The same question was analyzed with quantitative analytical techniques to show how the Philippine's National Irrigation Administration (NIA) responded to a reform that made it largely financially autonomous and dependent on user fees. It showed that this institutional reform induced NIA to be more cost efficient, to increase efficiency in water use, and to achieve greater equity.

Analysis of the pattern of public investment in irrigation in Sri Lanka showed that there has been a shift from investment in new projects to investment in rehabilitation and modernization, with emphasis on enhancing the efficiency of water management. Instead of charging water fees, Sri Lanka chose to delegate to users responsibility for O&M below main system level management. Investments in rehabilitation and modernization of water delivery systems, coupled with these reforms for participatory management, have had very high cost-benefit ratios, far higher than the previous investments in major infrastructure.

While reported by IIMI under this programme, the valuable research on the performance of public irrigation agencies logically pertains to Programme 3. Future research proposes to look at the bureaucratic and political processes through which irrigated agriculture policies are made.

Research in Programme 2 does not yet address the broader themes of sector-level management announced in the MTP, namely "to develop strategic planning methodologies and approaches for governments to formulate effective and realistic national and state policies and plans for the development and management of the irrigated agriculture sectors of their countries". We regard the research agenda of Programme 2 as of fundamental importance to IIMI in as much as it helps integrate irrigation management research with the broader sectoral and policy issues. Among those are the pressures to reallocate water to non-agricultural uses, which require increasing the efficiency of water use in agriculture and thus demand greater attention by governments to water management issues in agriculture. This new programme has yet to evolve a coherent research agenda,



with well defined priorities and hypotheses, and a clear division of labour with other agencies conducting research on these broader themes. As soon as this is done, this programme needs to aggressively seek funding for its projects.

**3.3.3 Programme 3: Improving Public Irrigation Organizations** (in 1994: 16.9 research staff, a core budget of US\$ 185,000 and one core project)

This programme has published only 2 scholarly publications, 1 proceeding, and 1 working paper. However, most of the work reported under Programme 2 properly belongs here. In addition, a large share of country-programme research pertains to this area of work, particularly research done in Pakistan and Sri Lanka, even though there has been little formal integration with headquarters research programmes. Proposed research focuses on analyzing which kinds of public irrigation organizations work best, and how to manage the required processes of reform of these organizations. This would be done through comparative case studies using methods derived from the management and organizational literature. We regard this area of work as vital to IIMI's research agenda since public organizations at present dominate irrigated agriculture, and the reform of their management practices is a key to improved performance of irrigated agriculture. For success in this research, clear integration between country-programmes research and headquarters research programmes needs to be pursued vigorously.

**3.3.4 Programme 4: Toward the Local Management of Irrigation Systems** (in 1994: 39.4 research staff, a core budget of US\$ 907,000, and 13 core projects)

This is a subject in which there is considerable country and donor interest given the widespread on-going processes of transfer of irrigation management to WUA (Water Users Association) and the geographical importance of FMIS (Farmer-managed Irrigation Systems). It has published 6 scholarly publications, 27 proceedings, and 12 country and working papers, and the FMIS Newsletter in support of the FMIS network. This programme's budget includes much country-programme research which is not directly integrated with headquarters research.

The programme has addressed important questions on the determinants of effectiveness of local organizations for both surface and groundwater use, the role of supportive services and public assistance strategies to FMIS and the impact of public policy reforms such as water rights in affecting the performance of the FMIS sector, the correspondence between farmer management and the optimal technical design of water delivery systems, the development of approaches for the participatory generation of information and assessment of performance, and the design of local institutions for the management of village water tanks and underground water aquifers. The conditions for success in transferring irrigation management from government to local farmers' organizations is another important focus of research. It has been pursued through a number of country case studies (Philippines, Indonesia, Sri Lanka, Senegal, Sudan, Bangladesh, USA, and recently China) and subsequent comparative analysis and extraction of generic research results. This research has provided materials for the FMIS Newsletter and eight workshops of the FMIS network.

Important conclusions have been derived from this research, showing for example: (1) the importance of institutional, legal, and technical support for WUA, and hence the need for guidelines to define the relationship between public and private roles for effective water management; (2) the importance of extending the functions of WUA to the provision of other services in order to consolidate their financial viability and enhance their sustainability; (3) the mechanisms through which user participation in management of the irrigation agency that collects water fees enhances performance; (4) the design of alternative organizations to enlist the cooperation of and insure the coordination among users of underground water; (5) the development of specific procedures to gather the information necessary for the effective monitoring of user-managed irrigation systems; (6) the development of performance indicators specific to locally-managed irrigation systems; and (7) the development of methods for the self-assessment of WUA performance and the use of this information to improve performance. The forthcoming publication *Locally Managed Irrigation Systems*, combines IIMI's findings with the broader literature to extract generic management and policy implications.

In our judgment, this is an area of research and technical assistance that is one of IIMI's hallmarks and where it may establish itself in a leadership position within an international network of irrigation professionals and through the generation of a flow of new knowledge. The programme is pursuing an ambitious agenda of country case studies and comparative analyses covering several years of work. To give a truly new perspective that goes beyond a collection of facts, it will need strong intellectual leadership and greater coordination of efforts between headquarters and country levels. Research hypotheses and methodologies must be more strongly grounded in the important theoretical advances which have been made in the fields of institutional economics and organizational theory, in particular regarding the determinants of cooperation and the performance of local organizations, the design of agrarian institutions and contracts, and the determinants of household and organizational behaviour in the context of fragmented and incomplete markets. It also needs to result in a greater flow of professionally refereed publications. This area of research should be one of IIMI's strong points, given careful attention to the aspects described above.

### **3.3.5 Programme 5: Sustainable Management of Water Delivery and Disposal** (in 1994: 40.1 research staff, a core budget of US\$ 664,000 and 10 projects)

Research efforts in this programme focus on the biophysical and engineering aspects, and its interface with the management aspects of irrigated agriculture. It has been very successful at linking these fields and should capitalize on this unusual integration. Studies are geared towards the understanding of how crop diversification, canal lining and maintenance, the use of decision-support tools, and the utilization of groundwater in conjunction with surface water affect the conservation of water, the flexibility and stability of water delivery, and the sustainability of the physical resource base. This programme has published 9 scholarly publications, 42 proceedings, and 15 country and working papers.

Through a number of collaborative efforts in Bangladesh, Indonesia, the Philippines, and Sri Lanka, IIMI studied the system management requirements and the

incentive structure needed for crop diversification, in general away from rice toward more high value crops. The research showed that achieving diversification is a complex business that requires changes in the water delivery, economic, institutional, and social context within which farmers make their choices.

In Pakistan and Sri Lanka, IIMI studied the impact of interventions on water delivery in two ways. First, by studying in the field the effect of three interventions (lining, desilting, and changes in operational management) on water delivery performance, and second through the development of a decision-support tool for improving water delivery by irrigation canals. Some of the conclusions from this action research are: (1) canal lining is only effective if the lining process is of high standard or where groundwater is already saline; if not, selective desilting based on hydraulic modelling tends to be more cost effective; (2) systematic planning, implementation, and monitoring of maintenance is technically and economically feasible in a developing country context; (3) conditions for equity in water distribution can be improved when a systematic maintenance programme is followed and rehabilitation of distributary canals is done; and (4) supply and demand of water can be better balanced and water losses reduced by a combination of the following measures: restoration of canals, improvement of maintenance practices, use of decision-support systems, and in Sri Lanka at least the participation of WUA to O&M.

Preliminary research on decision-support tools has shown that there is considerable potential for these vastly underused techniques to help improve irrigation management. We **suggest** that IIMI should have a focused programme of scientific work in the field of information technology, and that this should be closely linked to the different research programmes. However, IIMI should not spend resources on creating specialty software, but continue to act as an intermediary between centres of excellence which develop software, and practitioners in the field.

In the Pakistan and India programmes, as well as in other country programmes, the conjunctive use of groundwater and canal water was examined. A number of key issues, such as aquifer drawdown, water quality, equity effects of water markets, and organizational problems have been addressed. This research showed how to improve the information base and the monitoring process for aquifer behaviour and environmental degradation, and how to craft institutions to manage groundwater irrigation at the level of aquifers or groups of tubewells in a larger water-management context.

In some of its country projects (Pakistan, Sri Lanka, and West Africa), IIMI staff has been studying the effects of irrigation management on waterlogging and secondary salinization which is the result of inadequate irrigation and/or irrigation with salt-containing water. While research has been of the diagnostic type, IIMI should now focus attention on methods and techniques through which salinity in the root zone can be maintained at a level compatible with the cropping system.

Whereas in the past most research activities in this programme were of the action-type and rather dispersed, these problems now need to be studied in a more quantitative and integrated fashion. Irrigation agencies are badly in need of methods and tools that combine advanced methods and monitoring techniques to improve the

management of physical systems. A major contribution of IIMI in this field should consist of combining and adapting existing methods to make them operational in less developed countries. Integrated system models are very suitable instruments for predicting: (1) the effect of changes in O&M systems and management scenarios on water delivery in terms of efficiency, equity, adequacy, and reliability; (2) the cost-effectiveness of planned improvements in physical infrastructure; and (3) the downstream environmental impacts and the effects of upstream activities on the irrigation infrastructure. Optimization models make it possible to utilize and manage water resources for irrigation better. Simulation models can be used to analyze the processes controlling the physical functioning of an irrigation system and the relation between the system and the surrounding environment. We consequently suggest that IIMI should significantly strengthen its scientific skills in this area of research, and make more effective use of current collaborations to absorb this knowledge into its own research agenda.

### **3.3.6 Cross-cutting Themes**

#### **3.3.6.1 Gender Issues**

In agreement with the 1990 review, we stress the fundamental importance of gender roles in affecting the performance of irrigated agriculture and hence the need for IIMI to devote greater attention to this subject matter in its research. This theme is currently a subactivity within the Local Management Programme, and is staffed by an Associate Expert. Progress has been made in initiating research activities and conducting field work in Sri Lanka, Nepal, and Niger. However, it has as yet had little impact on IIMI's work and has resulted in little research output. In general, this programme suffers from insufficient commitment by permanent staff and insufficient interactions with the rest of IIMI's research, particularly at headquarters. There are no clear overall directions in IIMI's research toward gender and there is no integration with the overall research programme. This programme has suffered from IIMI's lack of attention to understanding behaviour, particularly at household and community levels. And not until the DR and programme leaders explore systematically how the gender dimension enters in their research will the theme be given due attention.

**The Panel recommends that all programmes and projects be reviewed for research opportunities related to gender, and objectives be established based on these.**

This recommendation will also require that serious consideration be given to recruitment of professional staff with the appropriate skills for this type of research.

#### **3.3.6.2 Health and Environmental Issues Related to Irrigation**

Irrigation has been associated with several vector-borne diseases and the management of water flows can influence their incidence. IIMI has been cooperating with PEEM (Panel of Experts on Environmental Management of Vector Control) in defining a research agenda, but this is still at a very preliminary stage.



Work on the relation between irrigation and the environment focuses on impacts within the irrigation system (waterlogging and salinization), above and on the irrigation system (watershed management), and by the irrigation system (downstream pollution and disturbances to water flows). Clearly IIMI has done important work on the first type of impact and this is where it should maintain its main thrust. As it focuses more on irrigated agriculture, a number of additional within-system environmental issues should be addressed such as the relationship between water management, pest control, crop diversification and agrochemical distribution.

With the USAID-funded Shared Control of Natural Resources (SCOR) project, the Sri Lanka field programme is now establishing an action research programme that integrates watershed and irrigation processes and management. Due to the difficulties of measuring biophysical processes, work on upstream and downstream effects will have to be done cooperatively with other CGIAR centres and specialized research agencies. In addition, given the fundamental issue of creating economic incentives for upstream land users to manage their resources in less damaging fashions, strong expertise in resource economics is needed, and this would be a good basis for cooperation with IFPRI. We **suggest** that IIMI may find it more consistent with its current expertise in within-system management to move toward the downstream environmental effects as opposed to upstream issues in the first instance.

### **3.3.6.3 Choice and Use of Technology**

The functioning of an irrigation system is controlled by the physical characteristics of the water delivery system and by its management, where the latter is the result of interactions between farmers, water users associations, and the irrigation agency. For an irrigation system to perform better, it is thus necessary that both its physical and organizational components be simultaneously improved. For this reason, it is essential that IIMI staff maintain expertise in technological issues for work in all of the five main subject areas of its agenda. The physical interventions which have been studied are few, and limited to canal lining, desilting, and changes in maintenance procedures. Given the strong management-technology linkages, which should be a hallmark of IIMI's expertise in the CGIAR System, we suggest that IIMI should pay greater attention, in collaboration with others such as IPTRID, to new technological options in irrigation and drainage, to scientific decision-support methodologies, and to use of modern measurement and communication systems, and to continued developments in the modelling of transport processes within the soil.

### **3.3.6.4 Improving the Global Database on Irrigated Agriculture**

Given its worldwide mandate, and particularly if it is to become a Systemwide Convening Centre on Water Management Research, IIMI should have a strong quantitative perspective on the global state of irrigated agriculture. A global irrigation database would assist IIMI in assessing emerging issues, and be useful to many other international organizations, less-developed countries researchers and decision-makers, and the private sector. Mainly due to lack of funding, no attention has been given to this cross-cutting theme. This is, however, an area where IIMI needs to move with caution, as there have been countless wasted efforts at building data bases. This is a major

enterprise more in line with the FAO's capability and mandate. The Panel **suggests** that IIMI should not start collecting data before a study is done on the type of information that it would be relevant to collect, the method of data collection to be followed, and the data processing hardware that it would need to acquire. We do not regard it as an IIMI priority.

### **3.4 Overall Assessment of Research and Recommendations**

A key question posed by TAC to this Review Panel concerns how far IIMI has gone in moving from a donor-driven project specific approach to a strategic demand-driven programme approach to research, after its entry to the CGIAR System, and how effectively this has been done. We answer this question by first characterizing the product expected from research in general and strategic research in particular. We then turn to the process used to achieve greater focus on strategic research. A linked question is how research has been affected by the broadening of IIMI's mandate from irrigation management to the management of irrigated agriculture.

#### **3.4.1 The Product of Adjustment to Strategic Research: Quantity and Quality of Research Output**

In general, we find that IIMI has made modest and uneven progress in achieving strategic research since entry into the CGIAR system, and that overall research performance still lags behind potential in quantity, quality, and impact. A few research products have been excellent and have received considerable attention. They are, however, still too few and only weakly cumulative in the development of a broader IIMI view.

In quantity, refereed journal articles for the last five years numbered 5 in 1989, 6 in 1990, 8 in 1991, 4 in 1992, and 6 in 1993 (Table 3.3). The total number of scholarly publications (refereed journal articles, monographs, and research papers) numbered 7, 6, 10, 4, and 9 in those same years, respectively. In-house publications numbered 19, 14, 6, 10, and 17, respectively. The totals of all publications were 38, 36, 32, 36, and 37, respectively. These figures show no significant change in research output since entry to the CGIAR or any greater focus on refereed journal articles and scholarly publications, where strategic research would be published. Although there is a time lag between adjusting priorities and achieving published output, there is no evidence that there is a larger flow of papers in the pipeline. Overall, this is a rather low output for a research staff of 43 professionals at headquarters and 91 in country programmes (Table 2.3). This is confirmed by a recent survey of publication rate in 22 IARCs, including 16 CGIAR Centres. IIMI ranks 21st for total publications per total research staff and 19th for journal articles per internationally recruited scientist per year. This low performance raises the important questions of whether there is proper time allocation between research and other activities, whether there are adequate incentives to stimulate publication, and whether there are the right professional skills to generate publishable research.



**Table 3.3 IIMI's Publications by Outlets and Years****Classification 1:**

Type of publication	1989	1990	1991	1992	1993	Total
Scholarly publications	7	6	10	4	9	36
Proceedings	17	20	19	26	17	99
Working & country papers	14	10	3	6	11	44
Total	38	36	32	36	37	179

**Classification 2:**

Type of publication	1989	1990	1991	1992	1993	Total
Refereed journals	5	6	8	4	6	29
Chapters in proceedings elsewhere	14	16	18	22	14	84
In-house publications	19	14	6	10	17	66
Total	38	36	32	36	37	179

**Legend**

Classification 1: Scholarly publications include journal articles, research papers, and monographs. Proceedings include chapters in conference proceedings and complete conference proceedings published by IIMI.

Classification 2: Refereed journals are articles in international refereed journals. In-house publications include monographs, proceedings, and other publications published by IIMI.

Quality of research is of course difficult to assess. Publishing refereed journal articles and scholarly materials is one test, particularly for strategic research, and it is poorly met. Another test is a survey of opinion of 47 national institutions run by the TAC Secretariat, a standard practice in CGIAR centre reviews. Results suggest that IIMI's research during the last five years is assessed to be between slightly and moderately valuable (see details in Appendix IV), an average score of 2.9 on a 5-point scale. These are modest marks at best. Scores given by research scientists and research administrators are lower than those given by managers and policy makers. Scores given by those who have been associated with IIMI for more than 3 years are, however, higher. Assessment of the future importance of IIMI's research areas is higher, with scores ranging between moderately and highly valuable, and an average of 3.8, confirming the importance of IIMI's research mandate and confidence among national institutions that it can deliver valuable research results in the future.

Our own assessment of research quality derives from our detailed review of a selection of IIMI's most important writings made for us by the Institute. In general, we find that individual papers address relevant issues. From the very first presentation of research results by programme heads to the review panel, we noted a tendency to undersell results. Undervaluation of achievements is compounded by scarcity of sufficiently visible publications. However, we also find that research procedures are in general not sufficiently explicitly grounded in the relevant bodies of theory, that insufficient high quality quantitative analysis is being used, and that results are not sufficiently translated into specific guidelines for management and policy improvements. This is partly due to the difficulty of the field of research, as explained in the first part of this chapter, but it mainly reflects an approach to research which is too often descriptive and discursive, lacks sufficient scientific rigour, and derives management and policy implications that are much too general. More use needs to be made of rigorous mathematical techniques, without implying that mathematics and statistics must permeate all research. More attention needs to be given to simulation of the impact of alternative physical, management and policy scenarios on performance indicators. For this, greater attention needs to be given to the specification of behaviour, to the identification of causal relations and processes, and to the use of analytical techniques that permit either comparison of alternative scenarios or derivation of optimum solutions. IIMI's research needs to be more solidly based on its vast cumulative experience, better grounded in theory and advanced methods of analysis, consistent with IIMI's mandate and with the institutional and informational context of the countries where it works.

Studies on irrigated agriculture are found in work on crop diversification, and on analyses of upstream (land use in watersheds) and downstream (effects of saline water in drainage) processes. We commend IIMI for not losing sight of its main focus of research while broadening its mandate from irrigation to irrigated agriculture. However, there are obviously many more important issues that concern irrigated agriculture than the above, and a comprehensive plan for work on this is still lacking. Some of these issues will enter in IIMI's research through a focus on farm household behaviour, farming systems, the interface between technological change in crops and water requirements, and work on sectoral policies.

Research has had an impact on the scientific community through several notable publications which have circulated widely and attracted the attention of the international scientific community to IIMI. This impact is however still modest. Impact on irrigation managers and policy makers has been obtained by raising their awareness of the large gap that exists between performance and potential, and by providing them with a number of alternative options to reduce this gap. By far the most significant impact has been obtained through the role of research in supporting institutional strengthening in specific country programmes and this is discussed in Chapter 4.

### **3.4.2 The Process of Adjustment to Strategic Research**

#### **3.4.2.1 The Future Definition of Research Programmes**

The Panel **suggests** that current programmes continue to be in an excessive state of flux, and would benefit from some logical reordering and greater focusing. Since IIMI

was started, the programme structure has been reorganized many times, with definition of some 30 successive alternative programmes over the years. Reorganization into a two-programme approach has recently been discussed as a way of focusing the research programme. We **suggest** that, with proper adjustments that can be accommodated within the current MTP, the programme structure in place seems generally adequate and should be given a chance to succeed instead of being amended once again so soon after definition. Better focusing of research should be achieved by sharper specification of priority research within each programme, rather than by administrative restructuring. Energies should now be fully devoted to implementing the current research agenda.

Five research programmes does not appear to be excessive as long as there are strong interactions across these programmes. If country-programmes personnel is affiliated to these programmes, critical mass is easily reached, although not necessarily in every country location. A 5-programme structure offers the advantage of stimulating decentralized initiatives by several research leaders. For donors, it offers clarity of the types of programmes which are being supported. And for research professionals, it offers identification with recognizable disciplinary traditions. However, as we shall discuss below and in Chapter 5, it only makes operational sense if it is accompanied by more decentralization of programme management compared to the current research management structure.

A suggested logical reordering of the current programme structure is as follows:

Programme 1: Water delivery, use, and disposal (currently Programme 5, "Sustainable Management of Water Delivery and Disposal"). This programme focuses on the interfaces between hydrology, engineering, agriculture and management; on the technology of water delivery, use, and disposal; on cost-benefit analyses of alternative options such as lining, desilting, drainage, and rehabilitation within different managerial structures; and on the development, adaptation, and use of quantitative decision-support tools. This programme should seize the opportunity of entering forcefully into environmental issues by capitalizing on a unique combination of interdisciplinary skills in biophysical and management sciences. Analysis should extend to downstream externalities and watershed management. If this theme is successfully developed, it may in due time spawn a separate programme on the environment and irrigated agriculture.

Programme 2: Resource management by farm households and communities (currently Programme 1, "Assessing and Improving the Performance of Irrigated Agriculture"). In accordance with the workplan set out in the MTP and the high priority given by the Board to this subject of inquiry, this program needs to complete the research in progress on performance indicators. This is expected to take up to 5 years more. After completion of this research agenda, further work on indicators should be present in all programmes, according to the issues addressed. In particular, analyses of the determinants of performance should be the objective of all programmes.

It is difficult to predict priorities so far ahead, especially in view of the likely changes in CGIAR. Below is sketched out an alternative agenda that could follow the current Programme 2. This would focus on behaviour in relation to management of resources, water in particular, since this is the linkage between changes in system design,

public and private management of irrigation, and policy and changes in performance indicators. The relevant levels are: (1) Rural households and individuals within households by gender and age, stressing differentiation across household types. (2) Communities, particularly for the management of common property resources. This includes contractual arrangements among households and communities for the allocation of water. This Programme would be the most logical home for the gender theme in terms of disciplinary affinities.

Programme 3: Local organizations for the management of irrigation systems (currently Programme 4: "Toward the Local Management of Irrigation Systems"). This programme is currently properly defined. It focuses on intermediary organizations, principally water users associations (WUA), farmer-managed irrigation systems (FMIS), and cooperative organizations for the management of surface and underground water. It addresses the important issues of turnover and privatization of water management, and of complementary institutional reforms as governments cease to deliver services, including service cooperatives, credit unions, technical assistance services, etc.

Programme 4: Public irrigation agencies (currently Programme 3: "Improving Public Irrigation Organizations"). This programme focuses on administrative mechanisms of water allocation and on the determinants of performance of public irrigation organizations, for instance the roles of bureaucratic incentives, decision making hierarchies, and financial responsibility. The process (speed, sequencing, and complementary reforms) through which reforms are being implemented is also fundamental for the success of managerial reforms as well as for eventual privatization and transfer.

Because public and private sectors always coexist in the management of water, with different relative weights and functions, careful consideration should be given to bringing Programmes 3 and 4 into one single programme that deals simultaneously with public and private organizations for the allocation of water. Arguing in favour of keeping them separate, but closely interacting, is the fact that they rest on different intellectual traditions within the social sciences.

Programme 5: Sector-level management and policy toward irrigated agriculture (currently Programme 2: "Sector-Level Management of Irrigated Agriculture"). This programme would focus on issues of public finance and investment priorities, planning techniques for the intersectoral allocation of water, property rights and the legal foundations of water contracts, the development of water markets and water pricing as mechanisms for the allocation of water, regulatory agencies for the performance of water markets and the determination of water fees, regulation of pollution and incentives for sustainability, the broader policy framework determining the structure of incentives and constraints, and long run dynamic forces such as population growth and global environmental change. Much of this work should be done cooperatively with IFPRI, the World Bank, and other agencies (see Chapter 7). It is, however, important for IIMI to participate at this level of analysis in order to maintain a link with the broader picture of water management.



There currently exist large imbalances across programmes in terms of staffing, resource support, and level of activity. We **suggest** that, if IIMI has a serious commitment to its current MTP, careful attention must be given to the discrepancies between desired and actual programme sizes and that remedial actions be correspondingly taken.

Cross-cutting themes were recently introduced, but have as yet not been a success. This is typical of a matrix approach to research management, where the secondary dimension (themes) is either competing for resources with the primary dimension (programmes), or left unstaffed and neglected. In our opinion, cross-cutting themes have not been organized in such a way that they can work. We **suggest** that these themes should be vigorously pursued but that this should be done by integrating them in all programmes when relevant, as opposed to de-facto managing them as separate sub-programmes. Each programme leader should have clearly formulated plans as to what his/her programme should be doing about cross-cutting themes (see Chapter 5).

IIMI should give far greater attention to the link between irrigated agriculture and the environment as this theme emerges as a well acknowledged critical issue and the CGIAR has identified it as one central to its mandate. Failure to move pro-actively on this theme exposes IIMI to the risk of finding itself dangerously lagging at a later date. Greater attention should be given to finding opportunities to do research on the environment within IIMI's mandate and core budget constraint, and collaboration with other institutions working on this vast subject should be arranged. IIMI should prepare itself for its role as a 'Systemwide convening Centre on water management research' by being proactive in addressing related environmental issues. A separate programme on the environment and irrigated agriculture may well be organized at a later date if this theme is successfully developed.

**The Panel recommends that IIMI explore opportunities to expand its research on the environment, particularly in relation to the Systemwide initiative on water management.**

This Panel is conscious of the danger of suggesting additional themes in a context of, at best, zero-sum core budgets. Trade-offs will consequently need to be made with other existing programmes. To this end, IIMI will have to engage in a full review of its priorities. Possible sources of savings are the consolidation of Programmes 3 (Public Organizations) and 4 (Local Management), minimal expenditures on Programme 2 (Sector) by conducting research principally through cooperation with others, and extensive collaborative agreements in the environmental field as well. In our judgement, however, the main sources of funds for this additional area of work should come from enhanced internal productivity in research, following the recommendations made by this Panel, which ought to allow work in new areas without sacrificing output in the existing programmes. Finally, if IIMI makes a convincing demonstration of its specific capabilities in this important field, additional funding through contract research seems to be a realistic possibility.

This Panel is also conscious of the need for IIMI to prioritize its efforts between moving into new research themes and enhancing the quantity and quality of its strategic

research as recommended by this Panel. We feel, however, that progress in the environmental theme is too rapid and widespread for IIMI to lag behind without serious risks.

### **3.4.2.2 Achieving Better Performance in Research**

IIMI's research projects need to relate more explicitly to the broader global picture, to identification of the major determinants of a water "scarcity" crisis and of the sub-optimal performance of irrigated agriculture. The relatively poor definition of current research is not due to lack of vision, but to the width of the gap between global vision and specific project definition. Establishing relationships between the broader picture and research priorities is the fundamental purpose of the development of a long term strategic plan and of an MTP which makes a collective vision operational. To be effective, future MTPs consequently need to be developed through intensive participation and cooperation among research programme leaders, country programme heads, and management and their respective teams. Only if the MTP is the outcome of such a process can it become a consensus document that sets research priorities, coordinates research, gives guidelines for project definition and screening, and relates project initiatives to the broader picture.

Given the rather unique approach which IIMI has chosen to fulfill its mandate, achieving greater performance in research also requires that headquarters research and country programmes be integrated into a single coherent programme, which has research, institution strengthening, and training components. Definition of research priorities should in part be done in response to identification of critical bottlenecks and opportunities in irrigation management at the level of country programmes. Information gathering and applied research done in country programmes should be clearly linked with overall research objectives and with Institute-wide research programmes. IIMI's greatest advantage in insuring relevance to its research is the close link which it has with user-driven demands. However: (1) Close participation of national representatives in the definition of country programmes through local Consultative Committees (CC), while essential, should not be confused with the setting of research priorities toward strategic research. CC demands for information may tend to be dominated by the need to provide answers to short run crises. (2) Headquarters needs to provide greater scientific guidance and more precise definition of research methods, in order to permit effective comparative analysis across projects and countries, and the extraction of strategic knowledge from country-programme action research. (3) The current separation between research and institution strengthening in defining the content of country programmes is reinforced by the separate control over these two functions by a Director of Research and a Director of International Cooperation (DIC).

Most country-level institutional strengthening activities that have a sufficiently specific focus should be explicitly identified with IIMI's research programmes, either/or both as sources of information or for the dissemination of research results. In addition, all country research activities should be part of an IIMI research programme and hence under the shared authority of the corresponding research programme leader and the country programme head. A suggested organizational structure and a set of operational procedures in support of this integration are presented in Chapter 5. In this chart, the DDG assumes the responsibilities formerly assumed by the DIC and some of those by the director for Pakistan.



**The Panel recommends that each country research activity and most institutional strengthening activities be associated with a research programme, with the Director of Research and the Deputy Director General coordinating this integration.**

As CGIAR financial contributions have declined, and IIMI, like other CGIAR Centres, has to rely increasingly on contract project funds, the risk of "following the path of a consulting firm" is enhanced, particularly since opportunities for contracts are relatively abundant in this area of expertise. There is in principle no reason why reliance on complementary funding cannot be made consistent with IIMI's mandate, implementation of a coherent research programme, and achievement of strategic research. However, this will require increasingly careful adherence to sharply defined programme priorities set in the MTP, clear definition of hypotheses and methods before acceptance of special projects, and continuity of effort and accumulation of knowledge. To achieve this necessary guidance, we make a recommendation in Chapter 5 on the Programme and Project Subcommittee.

We noted that the volume of publications must be increased and that more research results need to be published in professional journals and refereed outlets. At the moment, too many research results remain in the grey literature where they are difficult to access and are not subjected to the rigors of anonymous peer review. For this purpose, the proper incentive structure must be put in place. In general, there should be much greater explicit demands made of the research staff to publish, with the highest scientific standards relevant to fulfill IIMI's mandate. In discussions with several top IIMI scientists, we noted confusion between the need to publish in the scientific literature, and perceived relevance of this type of knowledge for real practitioners in the field to whom IIMI scientists have strong commitment. This confusion needs to be resolved, and a clear definition of the requirements for publication should be specified in job descriptions and in the definition of goals. Evaluations of research staff performance should be done, with feedback to staff directed at helping individuals improve their future research performance. Associate experts seconded to IIMI should be explicitly induced to publish on behalf of the Institute and generally jointly with their IIMI collaborators. For the moment, those experts located at headquarters are not sufficiently integrated in IIMI's research programmes and are too often left adrift. This is not the case in country programmes where this integration has usually been effective. Greater incentives to publish should also be given to national collaborators by defining more explicitly their roles in the process of research and publication. In general, these collaborators should be joint authors of the publications based on work in which they have participated.

As recommended by the two previous review panels, greater use should be made of external panels of experts and international advisors to enhance quality of research output. According to IIMI's response to the 1990 donor sponsored review (see Appendix VI), this does not appear to have been done except on one occasion. It is, nevertheless, a small part of what is needed to insure quality. The key sources of quality performance and quality control are in our opinion to be sought in improving the intellectual climate that prevails at IIMI. This climate must stimulate creativity and collegiality, and use peer pressure to enhance the quantity of research and peer advice to enhance the quality of research. It should be created by organizing periodic seminars, informal presentations of

proposed research initiatives and early results, reading groups on new subjects to be explored, short courses on key issues (e.g., new advances in quantitative analysis and computer packages, in the theory of institutions, in management techniques, etc.), and in general by fomenting an atmosphere of intellectual ferment and discussion. At present, not much of this occurs, and individualism is the dominant norm.

Sharper focusing of research also needs more clarity in the division of labour with other research institutions in the field of irrigated agriculture and the necessary supporting collaborative arrangements. These arrangements have to be based on a clear understanding that IIMI's five research programmes all need specific partners. This includes both other CGIAR Centres and other participants to the field (see Chapter 7).

Finally, quality can be increased by a stronger interface with the international scientific community and with centres of excellence at the frontier of knowledge in the different fields involved. For this, IIMI has to seek greater involvement in collaborative projects, and make more effective use of visiting scholars, students doing doctoral dissertation research, and scientists on sabbatical leave. Participation in scientific conferences should also be encouraged.

### **3.4.3 Needs in Adjusting to Strategic Research**

Strategic research is a demanding task that requires technical skills and the organization of research teams that are markedly different from those needed for donor-driven project-specific research. We started this chapter by observing that the subject of irrigation management research is highly interdisciplinary. This raises difficult questions for the disciplinary composition of IIMI's research team, as it does in other CGIAR Centres which focus on agroecological systems, research management, and policy analysis. Since scientists need to interact with peers to keep up their disciplinary skills, this argues in favour of limiting the disciplines represented at IIMI to the essential ones. Disciplinary upkeep is partially insured by membership in at least one of the five research programmes, which each have disciplinary traditions. Access to other disciplinary talents needed to conduct interdisciplinary research should be sought through cooperative arrangements with top experts outside IIMI rather than by attempting to achieve full intellectual self-sufficiency. However, at least one IIMI staff member must be sufficiently qualified in the discipline to understand the scientific knowledge sought externally. As IIMI is to become a convening centre for a 'Systemwide initiative on water management' research, this disciplinary composition may have to be cautiously broadened.

Reading IIMI's research suggests that the quality of economic analysis is in general inadequate. Performance indicators include a variety of economic criteria, but a rigorous conceptualization of the processes that change performance levels is lacking. The skills needed to conduct rigorous social science analysis, economics in particular, are not possessed by enough of the current research staff. This raises important issues for upgrading the level of skills of current staff and selecting priorities for future recruitment of professional staff for the strategic research that is planned.

Ultimately, the Institute's only guarantee of improved strategic and overall research performance rests in the quality of its research personnel, and especially of its

DR and research programme leaders. These leaders have to be given greater incentives to perform and hence greater ownership over their programmes. To this end, we **suggest** that the decision-making processes through which research projects are defined, external financial support for contract projects is sought, research teams are organized and staffed, and the relevance and quality of research is monitored should be more decentralized to the level of programme leaders. This greater degree of autonomy and responsibility of programme leaders is also needed for IIMI to achieve more success in generating desirable research contracts in an increasingly competitive arena of grants and special projects (Chapter 5). However, we stress that the suggested reorganization requires that programme leaders be first class international research scientists, research administrators and motivators of people, an unusual and demanding combination of talents. IIMI's success at strategic research will depend fundamentally on the quality of their performance, because decentralization has to be earned. Superior research and management performance will thus be expected from these leaders, after the opportunity to perform in a more decentralized fashion has been offered to them. We are optimistic that this can indeed be successfully achieved if these steps are taken.

## CHAPTER 4 - INSTITUTIONAL STRENGTHENING PROGRAMMES

### 4.1 Overview

IIMI has multiple goals. In addition to generating new knowledge through research to improve irrigation management and irrigated agriculture, IIMI is expected to strengthen national research capacities for work in the field of irrigation management and to support the introduction of improved irrigation management and policy making. This last goal is intended to ensure that IIMI has some positive impact on irrigated agriculture as well as to demonstrate the validity of its research knowledge. To meet these second and third goals, IIMI engages in institutional strengthening alongside research. For IIMI's institutional strengthening activities to have a sound knowledge base, and to gain as much learning as possible from the engagement of IIMI's staff with real-world irrigation systems, it is essential that there be strong linkages between the research and institutional-strengthening efforts of IIMI, as discussed in Chapter 3.

Panel members were able to visit eight of IIMI's country programmes in connection with this review and surveyed a large amount of documentation on these and the others. IIMI can take justifiable pride in much of the work done collaboratively with national institutions and professionals in these countries. The Panel considers the country programmes as an essential foundation for IIMI's research on improving irrigated agriculture as well as for its institutional strengthening efforts. IIMI has shown that this mode of operation is very successful with respect to professional development (see Appendix IV). This said, there are a number of issues that need to be addressed to make country programmes as a whole more productive in fulfilling IIMI's mission. In this chapter, we consider IIMI's country programmes in turn, including their research foci, since country programmes are not dealt with elsewhere in this report. Thereafter we will deal with issues and functions that pertain to IIMI's institutional strengthening mandate.

Levels of expenditure and personnel involvement in the various countries for the last five years can be seen in Table 4.1. Practically all of the funding for country activities has come from donors under various specific contract or grant arrangements, not through CGIAR channels. Core funding has accounted for less than 7% of country programme expenditure, and this has come from restricted core funds.

### 4.2 Country Programmes

#### 4.2.1 South Asia

Sri Lanka. This is the most developed and diversified of IIMI's country programmes, started in 1987, with research ranging from the farmer level to the irrigation scheme level to the policy level. Sri Lanka's long tradition of irrigation, over 2,000 years, makes this sector very visible, with irrigation systems ranging widely in both size and climatic conditions. The Sri Lanka country programme has mobilized about 20% of

**Table 4.1 Total Resources expended in Country Programmes, 1989-93**

Total expenditures shown in thousands of dollars\*

Staff numbers at year-end, shown in brackets (int./nat.)\*\*

	1989	1990	1991	1992	1993	TOTAL
PAKISTAN	1,114 (4/76)	1,009 (4/77)	1,383 (9/74)	1,700 (8/81)	1,434 (7/44)	6,640
SRI LANKA	458 (4/21)	519 (2/24)	514 (3/29)	763 (3/45)	1,595 (3/76)	3,849
BANGLADESH	157 (1/11)	172 (1/18)	159 (1/20)	140 (1/7)	270 (1/7)	898
INDIA	100 (1/0)	143 (1/0)	173 (1/0)	218 (1/0)	93 (1/0)	727
NEPAL	162 (2/8)	179 (2/11)	173 (1/11)	240 (2/10)	226 (2/10)	980
PHILIPPINES	326 (2/10)	268 (1/11)	851 (1/7)	10 (0/3)	25 (0/3)	1,480
INDONESIA	415 (2/6)	73	0	0	0	488
EGYPT	0	18	0	21	0	39
MOROCCO	41 (1/1)	95 (1/1)	95 (1/1)	105 (1/1)	44 (0/1)	380
SUDAN	219 (1/3)	314 (2/8)	453 (2/9)	272 (1/13)	223 (1/17)	1,481
BURKINA FASO	0	0	107 (1/0)	142 (1/16)	160 (1/24)	409
NIGER	0	0	121 (1/0)	164 (1/29)	199 (1/36)	484
NIGERIA	20	40	146 (1/5)	234 (1/8)	253 (1/8)	693
MEXICO	0	0	0	0	63***	63***
WEST AFRICA REGION	243*** (1/7)	335*** (1/8)	240*** (1/3)	254*** (1/4)	156*** (0/3)	1,228***
<b>TOTALS</b>	<b>3,255</b> <b>(19/143)</b>	<b>3,165</b> <b>(15.7/158)</b>	<b>4,415</b> <b>(16.4/159)</b>	<b>4,263</b> <b>(17.4/217)</b>	<b>4,741</b> <b>(14/229)</b>	<b>19,839</b>

\* All funds are "complementary" except as indicated

\*\* Including Associate Experts and Assistant Irrigation Specialists

\*\*\* From "restricted core" funding



total complementary funding and has had about 15% of international staff. Research output has been more than any other country programme (about one third of country programme publications and papers), and IIMI's support for the institutionalization of participatory irrigation management has been effective.

Working relations with the Government of Sri Lanka are quite close. IIMI is looked to for advice and is helping to strengthen research capability in the irrigation sector, establishing an Irrigation Research Management Unit within the Irrigation Department. The department appreciates IIMI's action research in a water-short system (Kirindi Oya) to optimize production through a combination of technical and organizational initiatives. Lessons from this work are being extended now to other schemes. The government and USAID engaged IIMI to design and implement an innovative project (SCOR) that brings together watershed and irrigation system users for the purpose of having integrated as well as participatory natural resource management. This is the only project in which IIMI is trying to enhance the sustainability of irrigation systems by working at the same time on watershed management. This could produce some very important results, with both technical and organizational innovations tested under field conditions. The programme has been able to draw on some talented national professionals and has good internationally-recruited leadership and staffing.

Bangladesh. The Panel was not able to visit this country, where about one-third of the cultivable area is irrigated, 80% of it from wells. This is quite a different setting for irrigation from that in the rest of South Asia. A central theme of IIMI research undertaken here since 1988, consistent with national policy, has been to enhance the efficient and equitable utilization and expansion of groundwater irrigation facilities which are increasingly operated privately. The research relates to several comparative themes of IIMI research: Farmer Managed Irrigation Systems (FMIS), and irrigation management for crop diversification. An institutional strengthening programme has been supported by the Ford Foundation to work with the Bangladesh Agricultural Research Council and the Bangladesh University of Engineering and Technology to improve their capacities to do research and carry out programmes on irrigated agriculture. Research outputs have been limited but are relevant to national issues. This programme will change to non-resident status because of lack of adequate financial support.

India is a major country in terms of total irrigated area. IIMI started working in India in 1989 in a non-residential mode, helping to organize collaborative research on irrigation management by government and university institutions in four states: Tamil Nadu, Gujarat, Uttar Pradesh, and Bihar. Panel members who visited India found this assistance much appreciated by the staff of the institutions involved. The approach being developed could evolve into fruitful work on a broader scale on more issues and in more states. Within the government at national level, we noted more interest in a larger IIMI role from the agricultural side than from irrigation and water staff. It appeared also that there was more interest in IIMI involvement at state level than at the centre.

There is already considerable national capacity for irrigation research in India, though not much of this is focused on management issues or carried out in an interdisciplinary way. Much could be learned from working with Indian institutions and researchers that would be of value to the wider irrigation management community, in the



process helping to strengthen the interdisciplinary capabilities for research in India. Governments there are facing a variety of issues on turnover and farmer participation on which IIMI has considerable experience. Studies done with IIMI support show that present irrigation management achieves less area coverage and less efficiency of water use than generally supposed. This fact presents opportunities for both research and institutional strengthening of considerable value. On this line IIMI has contributed to the establishment of the Tamil Nadu Consultative Group on Irrigation Management.

Nepal. Unfortunately the Panel was not able to visit this programme, but there was substantial output to be reviewed. IIMI has had a good and active programme in Nepal, focusing on farmer-managed irrigation systems. Before IIMI started working here in 1985, there was little government attention to FMIS, which include about 60% of irrigated area in the country. Action research demonstrated farmer capabilities for contributing to canal rehabilitation and to better O&M of systems. Methodologies have also been developed for farmer-to-farmer diffusion of management innovations. Turnover, which IIMI's research supported, has become a national policy, which the Institute has been assisting in various ways. While Nepal is a small country, its poverty and ecological problems make it a good candidate for continuing IIMI activity, combining some knowledge generation with engagement in urgent management problems.

#### 4.2.2 Southeast Asia

Philippines. This country has been the pioneer in establishing participatory management of irrigation systems, with innovative policies for mobilizing resources from water users. As in Nepal, farmers manage a majority (55%) of the irrigated area. IIMI began its programme here in 1986, working on issues of crop diversification, irrigation service fees, and organizational dynamics. Its programme currently focuses on assessing Philippine experience with participatory irrigation management and enhancing the sustainability of water user associations through self-assessment methodologies. The Philippine programme more than others has worked with regional as contrasted with national universities, e.g. Bicol University and University of the Philippines in the Visayas, to strengthen their capacity for irrigation management research.

At present the IIMI programme in the Philippines is on hold. During a visit from the Panel, considerable interest in continued IIMI involvement in the Philippines was expressed by both the National Irrigation Authority (NIA) and Department of Agriculture. Since NIA now comes under the Department, the previous administrative separation between irrigation and agriculture has been overcome. NIA has been a leader in the areas of turnover and local management, so this remains a promising country for IIMI to undertake research and evaluation. IIMI has focused on producing manuals (9) and research publications (7). Both are important resources of knowledge and experience, of which much can be transferred to other countries.

Indonesia. This country has followed some of the examples of the Philippines for improving irrigation management, but with less evident progress. It has been more difficult here to get irrigation and agriculture agencies linked organizationally and to get devolution of responsibility to water users. IIMI's action research at East Maneungteung in Cirebon was much appreciated by the Public Works Department for demonstrating

what could be done cheaply by increasing farmer participation to raise water use efficiency and production. A visit from the Panel found more favourable official attitudes toward IIMI than when its programme was terminated after five years in 1990. Unfortunately now the prospects for donor funding are less promising, but IIMI could play an important role in institutional strengthening as well as research if it were able to mobilize the needed financial support.

#### **4.2.3 West Asia and North Africa**

Pakistan. This programme, begun in 1986, is the largest of IIMI programmes, with about one-third of total Country Programme expenditures over the last five years and about one-third of the internationally-recruited staff. Our field visit confirmed that there is strong interest in the IIMI programme from the Government of Pakistan side. This is symbolized by the government providing IIMI/Pakistan with an excellent new building for its offices. Improving irrigation management in Pakistan is tremendously important. The Indus river basin contains the largest contiguous irrigation system in the world, with tens of millions of people directly depending on its performance. Growing problems of secondary salinization, resulting in part from poor systems management documented by IIMI, are becoming widely recognized, as are the relatively low yields from irrigated agriculture, eliciting increasing concern.

IIMI has generated extensive data in a number of irrigation systems in Pakistan, contributing to policy-relevant conclusions in areas such as operation and maintenance. As the need to raise productivity and prevent loss of irrigated land due to soil degradation becomes more evident, IIMI's work is being welcomed at high levels of government, though with slower acceptance at lower levels. The results of research are thus more likely to be translated into action. Partly because of the stronger link that IIMI has to irrigation departments than to agriculture, some concern was expressed to the Panel that the research has not been interdisciplinary enough, involving less economic or agronomic analysis than appropriate. IIMI has focused mostly on hydraulic and engineering issues, which limits what it can say about irrigated agriculture.

The Panel believes there are good reasons to maintain a substantial and visible programme in Pakistan, given the country's importance for irrigation management and the importance of irrigation management for that country. Recent reductions in staff, however, will limit what IIMI can accomplish and what impact it can have. The programme has had four directors in eight years, which itself has reduced its impact. The Panel considers the current director well qualified to manage an effective programme. The priority he gives to improving local management and combating salinization represents a strategy that the Panel felt is appropriate and promising.

Morocco IIMI activities started here in 1989 with the rationale that Morocco was a country with relatively sophisticated technologies, decentralized management, and considerable diversity within the irrigated agriculture sector. The research there has linked with IIMI's work on FMIS. Consideration has been given to the management implications of alternative technologies. Due to funding uncertainties, however, this CP is no longer a resident one. Morocco is a prime case of a developing country introducing with some success relatively high-tech innovations in irrigation management. Experience

with this process in farmer-managed systems should be monitored and evaluated. Continuing IIMI involvement in Morocco, if funding for this can be found, would enable it to evaluate processes of technological improvement for other countries' benefit. IIMI cannot make useful contributions in this area without recruitment of staff with appropriate language and technical capabilities.

Sudan. This country has the largest irrigated area of any country in Africa, approximately 2 million hectares. Funding for IIMI's programme here, which began in 1989, has recently been extended through 1995. The programme has focused on performance assessment and improvement, consistent with IIMI's research theme in this area. It also deals with privatization alternatives for management. A particular contribution has been in the training area, strengthening institutional capacities of the Ministry of Irrigation. The Panel was not able to visit Sudan (or any other CPs in this region), but the documentation indicates that this CP is meeting some real needs in the country.

#### **4.2.4 West Africa**

A regional programme was started here in 1988 with a regional representative, recruited from CIRAD, who engaged in project development efforts until 1992. Three country programmes are presently operating in Burkina Faso, Niger and Nigeria. Half of the Review Panel was able to visit these three countries briefly in November 1993. With the exception of Nigeria, in most West African countries the irrigation sectors are fairly small. Most of the medium- to large schemes are government-managed systems, whereas small-scale schemes are community controlled. IIMI is assisting with experimental efforts to improve performance. It seeks to sensitize agency staff and policy makers to the requirements of greater efficiency and productivity and to create awareness among farmers and field staff of how O&M can be improved and how resources can be better mobilized and managed.

Turnover of responsibilities to water users is a general theme, where governments are finding it difficult to finance irrigation schemes in conventional ways. At the same time there is reluctance to give up control. The Panel noted that the activities in the three countries, though they are registering some success, do not seem to be very well coordinated or linked with headquarters. IIMI's work is appreciated by governments, but there is some expectation that IIMI will invest funds in upgrading system performance as part of its programme. There is a need to rationalize IIMI's West African programmes so that more knowledge generation and institutional strengthening can be demonstrated. IIMI is working with WARDA on a regional basis to get multidisciplinary capacity in the region, and to sustain IIMI involvement in this part of the world.

Nigeria, the most populous country in Africa, is experiencing many difficulties with its irrigated agriculture. The performance and output of existing irrigation systems is very low. There is little cooperation of agency personnel with farmers or among farmers, and establishing WUAs and getting them to take responsibility for O&M is a major challenge. In this regard IIMI has made evident progress in the Hadejia Jama'are pilot project and assisted in the creation of WUAs for better irrigation management. Whether this can be sustained and expanded is uncertain, and will entirely depend on

future funding opportunities. Given large potential benefits of improved management there, IIMI could justify maintaining a programme there, but only if the Government is prepared to ensure continuity and if it is part of a larger IIMI programme in the region.

#### 4.2.5 Latin America

The decision last year to expand IIMI's programme into Latin America is an understandable one, especially since there is clear donor interest. It is important that this be a clearly focused programme thematically. There are significant turnover programmes underway in Mexico and Colombia which IIMI can share experience with and from which IIMI can learn on behalf of the international irrigation management community. Collaboration with other CGIAR centres, in particular CIAT and CIMMYT, is being initiated, with possibilities for working with CIP also in the Andean region. The Panel welcomes this, provided that IIMI defines a clear role for itself in any consortium arrangement and can make a sufficient staff commitment.

### 4.3 Consideration of Country Programmes

IIMI's country involvement can take a variety of forms, some of which may constitute country programmes and others not. It is important for IIMI to have a clear purpose and strategy for working in each country in which it is engaged, but the structure of programmes should be expected to vary. We see a continuum of degrees of engagement in a country from (a) full-fledged country programmes like Pakistan and Sri Lanka, to (b) smaller programmes with only one or two resident scientists, and to (c) programmes that have no resident scientist but some collaborative research or training based in national institutions.

The Panel found many commendable aspects of the country programmes it visited, and we can see some valuable outputs from those we could only review through documentation. There was a general association between the size of a country programme (budget and staff), and the quantity and quality of research and institutional strengthening. This supports the concern expressed by the IIMI Board with critical mass. The Board wants to ensure that IIMI's investment of resources in a country has some impact and that the goal of knowledge generation is not overwhelmed by institutional and administrative tasks. Small programmes with only one or two international staff cannot bring interdisciplinary analyses to bear on irrigation problems (unless they engage national counterparts actively) and find it difficult to produce clear impact.

The consideration of "critical mass" has not been dealt with very satisfactorily by IIMI thus far. The Panel thinks that this is more a relative criterion than an absolute one, depending on what IIMI expects to accomplish in a particular country, what impact it can reasonably expect to have and the capacities of the staff available. The question whether IIMI should be "in" a country or not is irrelevant. Rather, the question is what IIMI expects to be able to accomplish, with what resources, and with what prospect of continuity. This needs to be justified in terms of IIMI's priorities for research and for institutional strengthening.



The management of IIMI needs to have a clear rationale before committing itself to any country programme, especially if resident staff are to be posted to it. IIMI should be able to define the expected benefits in terms of impact or of scientific knowledge generation, and if these are not being achieved in a reasonable time, the programme should be terminated.

The Panel believes that IIMI can have impact without having resident scientists. Well-selected staff, with appropriate personal, language and other skills and having a well-conceived strategy for working with national institutions and professionals can make a success of non-resident programmes, though more easily for research than for institutional strengthening goals. In this situation links with projects in headquarters or in country programmes with 'critical mass' should be set up. The costs of such non-resident programmes are significantly less, and the possibilities for impact can be enhanced if the programme that emerges clearly has a national component. When assessing critical mass, IIMI should consider the intellectual inputs that national and regional professionals associated with IIMI's programme can make.

**The Panel recommends that (a) IIMI plan its country programmes to make maximum impact in the near term; and (b) critical mass to implement country programmes be located in very few countries, while work in most other countries be carried out without resident staff if it is part of a project based in Headquarters or country centres with critical mass.**

In some of the countries we visited, IIMI's reluctance to be seen as an "extension" agency has been understood to mean that IIMI is only a "research" agency, which diminishes the enthusiasm of government leaders and institutions. IIMI needs to communicate more clearly how it goes about achieving mutual reinforcement and synergy between its research and institutional support activities. IIMI is expected to have impacts, but mostly by working through national institutions, contributing indirectly (rather than directly) to changes on the ground by improving human resources and knowledge bases for achieving desired impacts (see Sections 4.4 and 4.5 below).

The effectiveness of country programmes has been hampered by considering only transnational activities to be part of IIMI's "core programme" and thus eligible for some of its core funding from the CGIAR. A considerable part of the country programmes seems so critical for IIMI research and impact that it must be designated as core. One could argue for core country programmes getting some core funds, based on the amount of funding that they generate, and the amount of resources which the centre gets from them. Also the use of core funds could make continuity of staffing easier.

Running country programmes entirely with project funding creates both distortions in these programmes and an undue burden on country programme heads and staff. It deprives IIMI's programme of some of the knowledge that can be obtained by systematic analysis of gathered data. This may be happening in some countries, where staff will not be able to draw out the implications of what has been observed and measured in projects undertaken with complementary donor funding.

The Panel recommends that IIMI define which Headquarters and country activities are properly part of its core programme, and support parts of the country core programmes with core funds.

#### 4.4 Training

IIMI considers training a principal means for institutional strengthening, along with information dissemination and networking. Rather than provide much training itself, IIMI employs what it calls "the training cycle." This aims to tailor training to identified national and local needs and to build up capacity for training to continue in national hands. The first step is to identify needs and constraints to be addressed in specific countries or organizations; then to develop a training plan and a curriculum jointly with senior managers; then to train trainers and produce training materials, and finally to monitor and evaluate the resulting training, making appropriate modifications. This is a reasonable approach to training for IIMI, and it has been worked through and applied in Malaysia in 1991-92, with the Department of Irrigation and Drainage. However, the training activity was initiated without a sufficient knowledge base, and IIMI has not been able to follow up with those who received the training.

At the moment, IIMI has lost its lead staff member for training (recruited by another CGIAR Centre and not yet replaced due to funding constraints). To move forward with the task of institutional strengthening, it is important to refill this position with an outstanding professional with the right mix of skills: imaginative approaches, experience in developing countries, willingness to learn much about irrigation management. Training is a specialized function where both technique and substance need to be combined. Because such expertise is scarce and expensive, there is good reason for IIMI to cooperate with other institutions such as the Economic Development Institute of the World Bank (for senior official level training), ISNAR (for strengthening national research capacities for dealing with irrigation management issues), and ICID (on various technical aspects of irrigation).

The Panel has **two suggestions** in this area. First, training is such an essential part of IIMI's responsibility for institutional strengthening that reinstating training capacity is a high priority, once the Institute's financial position becomes clearer in a few months' time. The MTP commits 17-20% of core budget to institutional strengthening, a good part of which involves training. Second, IIMI's training efforts should draw primarily on its own knowledge base. This means that its research outputs should be assessed and used for developing training materials. Researchers should be involved in this but with the planning and support of professional training personnel, to be recruited after the first suggestion has been carried through. IIMI's training function should not need a large separate staff because IIMI researchers would be involved in all training programmes, with the professional guidance and supervision of the training head.

Most of IIMI's training effort should be with and through national institutions, with few purely "IIMI" courses and workshops. The programme should focus on the training of trainers and support the production and spread of training materials. A network of irrigation management trainers could be a first step toward upgrading this



specialized profession. In addition to imparting skills of high quality, training should promote behavioural change, which means affecting values and attitudes. This calls for more innovative training approaches. The work of IIMI/Nepal in developing, evaluating and documenting methods for "farmer-to-farmer" training is a commendable example of IIMI innovation in training strategies.

#### 4.5 Information Dissemination and Networking

These activities are discussed more generally in Chapter 6. Here we are interested in them as they relate to institutional strengthening. By and large these means are employed in a fairly diffuse way, not targeted to improving the capacity of any particular institutions. This is not necessarily a fault in IIMI's performance, as raising general levels of knowledge and interest within the general public or within professional groups is a worthwhile enterprise. Success in improving the performance of irrigated agriculture depends not just on particular persons or groups but also on general cultural orientations, social attitudes and political support.

We would like to see information dissemination become a more purposeful part of IIMI's strategy for institutional strengthening. It should be more than a public relations function. Communication should aim at certain groups of professionals in many disciplines whose clearer thinking about irrigated agriculture could help to improve performance. They will come to look upon IIMI as a source of reliable, state-of-the-art information if they receive consistently high quality and useful publications and other communications from the Institute. Our own assessment and some feedback from clients of IIMI's publications is that they are very well produced, but that their content is still uneven, and not always of the highest quality. We have suggested means for addressing this in the previous chapter. Use of new technologies such as CD ROM and video are highly encouraged to reach audiences, targeted and general, in cost-effective ways.

Given limited resources and the desirability of engaging many people and institutions with the issues that IIMI is working on, networking is an important part of an overall institutional strengthening strategy. It is, however, no substitute for more in-depth engagements involving selected institutions and personnel. Networks require staff and financial investment, and the impact and benefits of having networks should not be simply assumed. Much thought needs to go into how to make a network cost-effective. Our survey indicates that IIMI's FMIS network, with over 1,200 members, has been well-received and reasonably effective. It has disseminated case and policy knowledge through workshops as well as publications, aiming to build and maintain a community of interest that is more than a mailing list. This is an area presently of much interest to policy makers, irrigation managers and researchers. The network has reinforced one of IIMI's programme themes, local management. Whether other irrigation management subjects can attract as large and important a constituency is not known. The Panel **suggests** that any networks that IIMI organizes or sponsors should be linked to its research and/or training programmes. Electronic means of communication are to be employed whenever they can be used economically.

## 4.6 Suggestions for Improving Institutional Strengthening

Linkages between Institutional Strengthening and Research. Given the complexity of IIMI's institutional strengthening task and the need to pursue this task based on the best knowledge possible, we consider it important that the two "wings" of IIMI - research and international cooperation - be well integrated. As will be discussed in Chapter 5, coordination between these tasks can probably best be done by Country Programme heads. Thought needs to be given to how research and institutional strengthening efforts can reinforce each other rather than compete for resources and staff time. The Panel **suggests** that explicit strategies for institutional strengthening be formulated country-by-country on the basis of discussion among IIMI staff and with national collaborators. This planning should aim to ensure that the knowledge base from IIMI's research is both utilized in and augmented by the Institute's efforts to conduct research and strengthen operational institutions in specific countries.

Communication between Country Programmes and Headquarters. Rather too often during its visits to countries the Panel heard that field staff feel cut off from headquarters. Since institutional strengthening work is essentially left to the country programmes, it seems that this part of IIMI's programme does not get much attention from IIMI centrally. Often it was said that the substance of country-level research as well as institutional strengthening is not very well understood by IIMI leadership. We recognize that they are not free to travel everywhere or all the time. But the reported infrequency of their visits to most countries and the briefness of any visits to field locations prompted some Panel concern. We hope that formulating a more coherent research agenda for IIMI as a whole (see Chapter 3), with explicit connections planned between research and institutional strengthening, and with thematic research programmes linked to country programmes, that IIMI leadership, the DG, directors and programme heads, will have more stake in maintaining a better intellectual exchange with the field.

Criteria of Success. Institutional strengthening programmes even more than research programmes encounter difficulties in monitoring progress and in persuading governments and donors of IIMI's contribution because there are presently few measures of "success." The Panel has suggested above that each country programme have a stated strategy for institutional strengthening. This should include an implementation plan and a corresponding set of criteria or milestones for assessing progress. The strategy should set a limited number of goals, with estimated times for achievement, and be consistent with the research programme. No standard framework should be imposed. The intention is to focus attention on indicators for a very complex and subtle process that can absorb a lot of resources without much result unless guided by forethought and self-critical review. The formulation and evaluation of an institutional strengthening strategy should be done very openly and collegially with national collaborators so that the resulting assessments are ones that they share.

## CHAPTER 5 - ORGANIZATION AND MANAGEMENT

### 5.1 Governance

#### 5.1.1 Board of Governors

As shown in Figure 2.1, overall authority for IIMI's mandate and mission is vested in a self-perpetuating Board of thirteen Governors, which includes two ex-officio members. Meeting twice a year, the Board is responsible for approving IIMI's programmes, plans and budgets, and it accomplishes certain of these responsibilities through delegation to its three committees: Executive and Finance, Nominating and Programme. The composition of the Board over time, including nationalities, gender and disciplinary balance, is shown in Table 5.1.

The Board in its deliberations and actions subscribed fully to the mandate and mission of IIMI. At no time did the Governors display any doubt about the critical importance of irrigation management and IIMI's vital role in finding ways to bring about better irrigation management on a global basis. During the Board's several sessions in December of 1993, it was evident that all members came well prepared and regularly demonstrated an acceptable degree of familiarity with the subject matter.

#### 5.1.2 Board Committees

The Executive and Finance Committee in its session showed an acceptable level of awareness of the essential issues of finance and accounting. The Committee came well prepared and asked appropriate questions of the representatives of the external auditing firm and the Director of Finance and Administration. Since there were no accounting issues of consequence, it was not possible to judge the Committee's capabilities under more demanding circumstances. Their considerable grasp of financial details and their willingness to challenge inconclusive statements by the professionals present suggest, however, that this Committee will rise to whatever challenges occur.

The Nominating Committee, which has three members, met at some length. On the positive side, the chairman did ascertain that the current Board chairman was prepared to assume the active leadership role which he had in the past year been unable to fulfil. Less productively, the Committee devoted a considerable amount of time to suggesting and commenting on possible Board candidates, only to agree later with the full Board that as a matter of economy the retiring Governors ought not to be replaced. It was disappointing that the Committee did not deal more conclusively with the case of a Board member who had been regularly absent.

The Committee then addressed the nomination of committee chairs for the forthcoming year, a process which was made difficult by the fact that two of the three members were Committee chairmen. Despite this possible conflict of interest, the two Governors who have and are to chair the Programme and Nominating Committees are well qualified and are fully accepted by the Board.

**Table 5.1 Members of the IIMI Board of Governors**

Name	Nationality	Discipline	Gender	Nominated by	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	Current
Dr. R. Cunningham	U.K.	Agriculture		Support Group	c	c	c	c	c	x							
Mr. M. Mensah	West Africa	Administration		Support Group	x	x	x										
Ir. F.E. Schulze	Netherlands	Engineering		Support Group	x	x	x										
Dr. A. Muhammed	Pakistan	Agriculture		Support Group	x	x	x	x	x								
Dr. D. Peterson	U.S.A.	Engineering		Support Group	x	x	x	x	x	x							
Dr. G. Manuellan	France	Engineering		Support Group	x	x	x	x	x	x							
Mr. N. Abeywickrema	Sri Lanka	Administration		Host Country	x	x	x	x	x	x							
Dr. T. Wickham	U.S.A.	Engineering		Support Group	x	x	x	x									
Dr. R. Lenton	Argentina	Civil Engineering		Board					x	x	x	x	x	x	x	x	DG
Dr. K. Chowdhry	India	Social Science	F	Support Group	x	x	x	x	x	x							
Dr. A. Abdalla	Sudan	Agriculture		Support Group	x	x	x	x	x	x	x						
Dr. C. Grassi	Venezuela	Engineering		Board				x	x	x	x						
Dr. G. LeMoigne	France	Engineering		Board			x	x	x	x	x						
Dr. K. Takase	Japan	Engineering		Support Group	x	x	x	x	x	x	x						
Mr. B. Bagadion	Philippines	Engineering		Support Group	x	x	x	x	x	x		x					
Mr. D. Bell	U.S.A.	Economics		Support Group	x	x	x	x	x	c	c	c	c				
Mr. R. McNamara	U.S.A.	Administration		Board			x	x			x	x	x	x	x	x	EFC
Dr. L. Obeng	Ghana	Water/Environ.	F	Board				x	x	x	x	x	x				
Dr. G. Sandhu	Pakistan	Agriculture		Board						x	x	x					
Dr. J.P. Troy	France	Engineering		Board							x	x	x	x	x	x	C-PC, EFC
Mr. A.A. Wijetunge	Sri Lanka	Administration		Host Country							x	x	x				
Ms. N. Al-Shayji	Kuwait	Admin./Environ.	F	Supp. Grp./CG								x	x	x	x	x	PC, NC
Dr. Z. Azam	Pakistan	Economics		Supp. Grp./CG								x	x	x			
Mr. R. Rangeley	U.K.	Engineering		Board								x	x	x	x	x	PC, NC
Dr. M. Swaminathan	India	Agriculture		Board								x	x	c	c	c	C-EFC
Dr. H. Tsutsui	Japan	Engineering		Board								x	x	x	x	x	PC
Dr. T. Hullar	U.S.A.	Agriculture		Supp. Grp./CG									x	x	x	x	PC
Dr. L. Swindale	New Zealand	Agriculture		Board									x	x	x	x	PC, EFC, C-NC
Dr. Z. Altaf	Pakistan	Economics		Pakistan										x	x	x	PC
Dr. A. Traore	Mali	Social Science	F	Board										x	x	x	PC
Dr. E. Alves	Brazil	Economics		CGIAR										x	x	x	PC, NC
Mr. D.G. Premachandrar	Sri Lanka	Administration		Host Country										x	x	x	EFC

<sup>a</sup> Ex-officio Governors in their capacity as appointees of Government of Sri Lanka

<sup>b</sup> First appointed by Donor Support Group, then Ex-officio Governor in his capacity as IIMI DG

<sup>c</sup> Ex-officio Governor in his capacity as IIMI DG

C - Chair

EFC - Executive and Finance Committee

PC - Program Committee

NC - Nominating Committee

When queried, the Committee did not consider that its terms of reference called for a regular evaluation of Board make-up or Governors' performance. The Committee and the full Board need to know whether the membership has been sufficiently effective and whether the membership has an appropriate disciplinary balance, in programme and management fields, and, in particular, enough awareness of current science at the cutting edge to judge the promise and priority of new research initiatives (Table 5.1).

**The Panel recommends that the Nominating Committee should develop a mechanism to assess regularly the composition of the Board and the contributions of individual Board members and officers.**

The Programme Committee showed strong interest in the review of the research programme, but tended to confine its questions to matters of detail, rather than to those of relative importance and priority. It may have felt that the Board's probing during an earlier discussion on achievements and impact was adequate for these broader issues; in the Panel's view, a more penetrating style of questioning of management should be exercised.

By choice, the Programme Committee contains most Board members, an arrangement that has the advantage of giving most Governors the opportunity of participating directly in the essential business of IIMI. The December session of the Committee, however, was long and inconclusive, in part because all Governors present were eager to participate, but more importantly because most programme managers gave lengthy presentations with too much detail. They should have been challenged more about schedules, goals, or performance against one or both. The Panel **suggests** that the Programme Committee ought to require a standard format for programme presentations, and one which stresses key issues and tangible results. Additionally, the Committee should insist that every programme have defined goals, and, if possible, some definition of the "critical path" to each. Once these are established, the Board will be better placed to monitor IIMI's achievements and impact.

### **5.1.3 Board Leadership**

In the last year, the Board Chairman, due to other commitments and by prior agreement, has been comparatively inactive, and was replaced for all intents and purposes by a vice chairman. The absence of the Chairman was unfortunate in that it coincided with a number of critical events in the CGIAR System and in IIMI. The Panel is pleased to learn that the Chairman has been able to reorder his other commitments and is now able to serve normally.

During the Board sessions in December, the Chairman was effective in keeping the discussion focused and in affording the less vocal Governors with ample opportunity to express their views. He showed a very good level of knowledge about IIMI business and research. Since the current Chairman has in full the respect and reputation that Board leadership demands, he should be able to ensure that IIMI business is conducted effectively and expeditiously. What is needed now is a continuing insistence on goals and performance against those goals.



In carrying out his leadership responsibilities, the Panel urges that the Board Chairman also considers ways to improve the Board's effectiveness, and in that connection the Panel has five **suggestions**. First, the appraisal of the Director General and the setting of his goals for the ensuing year are a critical part of Board oversight, and these matters need to be given a clearer and more conclusive treatment than was the case in the December 1993 Board meeting. All appraisals of senior management should focus on output rather than input measures. Second, as the last item on each Board agenda, there ought to be a closed session in which the Governors assess how the Board and Committee meetings have proceeded, and what might be done in the future to improve their effectiveness. Third, before the agenda for a forthcoming Board meeting is finally decided, each Governor should be encouraged to suggest items which he or she feels should be included. Fourth, the Board should periodically review the quality of its decisions. Fifth, the Board should seek closure on important issues (such as definition and measurement of critical mass for country projects discussed at the April 1993 Board Meeting) to give IIMI managers clear policy direction.

## 5.2 Leadership and Organization

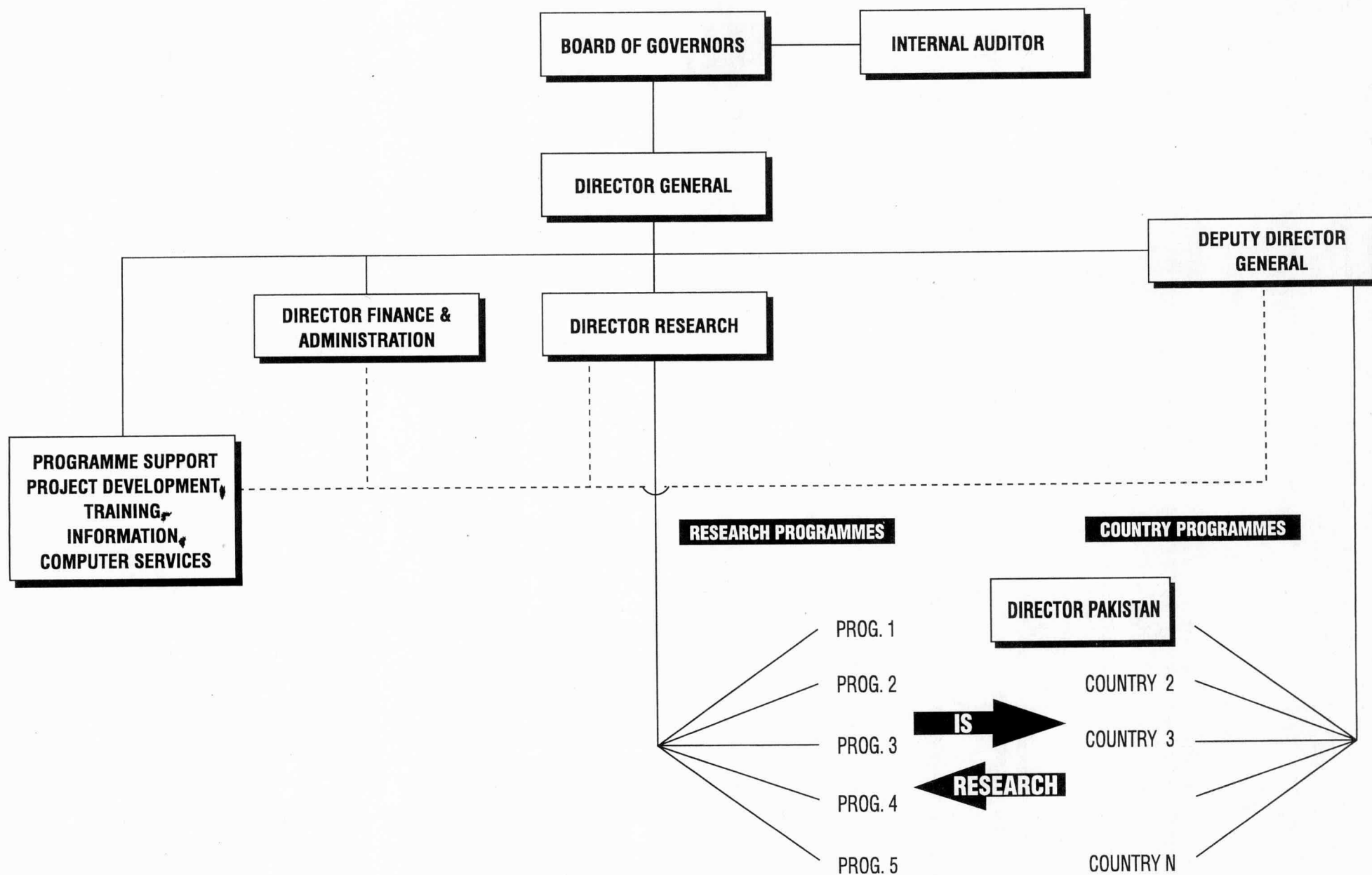
### 5.2.1 Organization Structure

IIMI's organization chart is presented in Figure 2.1. The Director General functions as the Chief Executive Officer and is responsible to the Board of Governors for the overall management and development of IIMI. The Director General coordinates the various roles and functions of IIMI, and is assisted by a Deputy Director General, four Directors, the Head of the Project Development Office and the Head of Information, and by an Executive Management Committee. The latter Committee is comprised of the Director General, Deputy Director General and the Directors and meets every two months to discuss policy issues. A budget Subcommittee and a recently established Programmes and Projects Subcommittee report to the Management Committee. Each Subcommittee meets monthly, and in addition to the Director General and the Deputy Director General each includes appropriate senior management in its membership.

Outwardly at least the current organization structure is one that is reasonably traditional within the CGIAR System. However, it is not functioning as effectively as it should and is probably more expensive to operate than IIMI's financial circumstances can tolerate. As conceptually visualized in the attached organization chart (Figure 5.1), the Panel **suggests** the following changes: First, there appears to be a rather heavy concentration of staff at Director level. The Director of International Cooperation will go on half-time appointment as a transitional measure, after his contract comes to an end in June 1994. The past experience and the personality of the DDG make him very well suited to oversee the important country programmes, and it is intended that he should take responsibility for these in due course. The Panel feels that this is a good arrangement, and endorses it in the diagram in Figure 5.1. Second, since research is the primary function of IIMI, there ought to be a clearer delegation of responsibility from the Director General to the Director of Research along the lines described in Section 5.3.4. Third, given the importance of information, training, computers, and project development to the



Figure 5.1 A Structure for IIMI.



research agenda, the Panel urges that a Programme Support Group be formed and that it include the functions of information, training, computer services, and the Project Development Office. This will bring these services closer to research and institutional strengthening as part of the process of integration and decentralization recommended in this Report.

**The Panel recommends that a Programme Support Unit be created that includes project development, training, information and computer services.**

### **5.2.2 Leadership and Senior Management**

In nine years IIMI has grown from nothing to its present important status, and we give credit to all members of the management team for the roles they have played in this. In particular, the present DG, who has been in post for seven of these years, deserves full recognition of his vital role.

IIMI has grown at a pace that has caused management systems and processes to lag behind the needs of the organization. Earlier IIMI had a strongly participatory style. Now, from the perspective of staff interviewed and surveyed by the Panel, the DG as well as the senior managers have consistently demonstrated their willingness to listen. However, in the case of some important decisions, employees who had provided inputs could not understand how the inputs were used in the final decision reached, and they perceived the DG's style as top-down and, at times even arbitrary. The DG has informed us that he recognizes that he has acted in a much less participatory style in the last two or three years. He believed that this was necessary because of the many important decisions that had to be taken following acceptance into the CGIAR. However, staff were not informed that there was a deliberate change of style. The Panel **suggests** that the DG could make the process of decision-making more transparent by clearly delineating where responsibilities lie and by specifying - when he makes decisions or accepts a consensus -- how inputs will be used. Once decisions are made that impact on employees, he should, as a rule, explain the rationale behind the decision. In the Panel's view, the DG is an excellent communicator, and should rely more on these skills to increase staff confidence in management decisions. A great deal is gained by an open atmosphere. (see Section 6.1.1 on staff morale.)

The question is how IIMI should deal with decisions in the future. It has grown to a size where the earlier participatory style may no longer be practicable. However, participation can be regained by delegation of authority and responsibility to lower levels of the organization, as the Panel has urged elsewhere, where participatory action can be taken. However IIMI arranges these matters, it is absolutely essential that staff should understand what is expected of them, and where any particular decision is ultimately to be taken. We **suggest** that the DG needs to clarify these questions as soon as possible.

In this connection, the Panel considered the performance of the senior management team. The DDG is an efficient administrator, and has an excellent background in the practical management of irrigation systems. He would operate more effectively if he had a clearer job description, giving him duties that are more obviously segregated from those of the DG. The Panel agrees that the DDG will be well suited to assume responsibility

for the non-research aspects of country programmes (that are under the Director of International Cooperation).

As the report indicates, the administrative parts of IIMI function well. In the Panel's view, the Director of F&A provides a strong and strategic management perspective to the senior management team. On the research side, lack of continuity has been a problem. The post of Director has been filled twice in rapid succession. The current Director of Research only took up the post in 1993, and is still working to control a complex and rather disorganized research structure. This gives him much less time than he should have for building up the science of his team and concentrating on research direction. Much of the Panel's report focuses on the need for IIMI to set procedures and systems in this area that will operate in a smooth and systematic manner.

In the Panel's view, effective partnerships were taking place among some but not all members of the senior management team. The Panel suggests that the senior management team should work as a team and thereby act as role models for cooperative efforts among their subordinates. In order to do so effectively, they will need clear mandates to manage in their respective areas, and time to do so. Consequently, the Panel **suggests** that, while consultation should continue to be IIMI's leadership style, the DG should require more timely closure of decisions than has been the past norm.

### **5.2.3 Planning, Monitoring and Review**

During the past five years IIMI has been busy with a continuous succession of planning and review exercises. Most of these are externally induced (by IIMI donors, the CGIAR, TAC) and their timing and content are not necessarily under IIMI's control. Since joining the CGIAR System, IIMI has had to revise its strategic plan and develop a medium-term plan. In some cases these exercises have even overlapped one another. For example, while IIMI was busy preparing its medium-term proposals, it had to engage in preparing for this Review for which documents had to be prepared before the final decisions by TAC and the CGIAR were known. Clearly, such endeavours often compete with rather than complement the research and institution strengthening work for which IIMI exists, and too much time is consumed in this for some staff.

IIMI's first Strategy Paper was prepared in 1988. However, following the entry into the CGIAR System in January 1991, IIMI's Board and Management decided upon a review of the Institute's mission, goals and strategic direction. This was done to fully capitalize on the new opportunities and relationships offered by IIMI's entry into the CGIAR System, and also to assist the Institute in developing its medium-term proposals for consideration by TAC and the CGIAR.

To this end, starting in mid-1991, IIMI held a series of workshops to involve staff, Board, clients, donors, and collaborators in the preparation of its current Strategic Plan entitled: "Improving the Performance of Irrigated Agriculture - IIMI's Strategy for the 1990's". The result takes the Institute from an original, and relatively narrow focus on irrigation systems, to a wider view, that focuses the attention of IIMI's work on the irrigated agriculture sector as a whole. This change in IIMI's mission has been regarded as being "appropriate" by IIMI's national collaborators, as revealed in the survey

responses (Appendix IV). However, judging from its medium-term plan and from our investigations, the Panel concludes that IIMI has a considerable way to go before the full implications of the wider mandate are adequately reflected at the programme level.

Our sense, as reflected in this Report, is that IIMI's broad vision of the future programme priorities as laid out in the strategic plan and the MTP are generally valid and appropriate in providing guidance for the Institute's overall organization, programmes and operations. However, the Institute must now concentrate on creating a stable operating climate which would allow it to move firmly and rapidly forward towards becoming a scientific organization that is focussed on performance and excellence.

Strategic and medium-term operating plans are seen as iterative. Revisions in operating plans with some shifts in programme focus occur frequently - in response to externally as well as internally induced forces, and the Panel makes some suggestions for programme focusing in the future in Chapter 3. However, the CGIAR System itself is currently being reorganized, and systemwide and ecoregional programmes will provide opportunities for new modes of collaboration and funding with international and national cooperators. IIMI must take steps to ensure that its planning processes are sufficiently flexible and responsive to take full advantage of the emerging opportunities in the CGIAR. This aspect is further discussed in Chapter 8.

In principle, IIMI has five mechanisms for monitoring performance: (1) Financial oversight through the annual programme and budget request. (2) Programme and project review by the Sub-Committee on Programmes and Projects. (3) Programme and project review during the annual Internal Programme Review (IPR). (4) Programme and project review during the April meeting of the Programme Committee of the Board of Governors. (5) Peer reviews as appropriate. The effectiveness and utility of these processes are assessed below.

In monitoring and review there is again a mixed record. The programme budgeting process is operative and is clearly being improved as a result of the efforts of the Director of Finance and Administration. The Panel, however, found that some managers had no clear knowledge of their budgets and in many instances budget overruns appear to have been accommodated, apparently without penalty on the budget holder. If overruns are countenanced, the discipline of budgeting is degraded not only in the minds of those whose overruns have been tolerated, but by the others who sacrificed to stay within budget and now find that it apparently did not matter. The Panel understands the Centre is in the process of developing stronger systems and procedures that could check this practice. However, even without these, the Panel sees no reason why budget overruns should not be charged to the budget holder in the succeeding year.

The monitoring and review practices of the Programmes and Projects Sub-Committee are too new to be seriously evaluated or judged. The Panel would, however, caution IIMI management that its interviews revealed a much greater emphasis on input measures when discussing performance than on output measures. Hours and activity levels are not to be disregarded, but they tend not to differentiate between productive and less productive work and research efforts. As reported earlier (Chapter 3), the use of peer reviews has been much more infrequent than is desirable in a research organization.

The monitoring by the Board's Programme Committee has been remarked upon earlier (Section 5.1.2) and here we only emphasize the Board's concern with impact, and its expectation that the Programme Committee in particular will be requiring evidence of impact in the near term. The Board itself is, of course, concerned with monitoring and in addition to its expressed concern with impact, it has sought assurances about quality control, a subject it reviewed but did not conclude at its most recent meeting, but that presumably will appear on the April 1994 agenda.

The Panel is concerned that the foregoing processes appear to be more retrospective than prospective in many cases, and under the circumstances **the Panel recommends that the programme review, forward planning, and monitoring processes be based on the pre-established objectives for each project, and be fully and consistently implemented.**

### 5.3 Programme Management

IIMI's research programme was discussed in Chapter 3. The fundamental conclusion was that, while overall performance is encouraging, achievements are still significantly below potential, and making a transition toward strategic research has been slow. Improved research performance and greater focus on strategic research require adjustments in the management of research. In this section, we consequently review the structure and performance of research management and make a number of suggestions and recommendations for improvement.

In Chapter 4, IIMI's institutional strengthening (IS) programmes were reviewed. For improved performance, they also require a number of adjustments to IS management. Since both research and institutional strengthening are (and should be more) closely related, we discuss these two subjects as overall programme management.

#### 5.3.1 Research Characteristics

We noted in Chapter 3 that IIMI's approach to research has distinguishing characteristics that relate to both the nature of the field of inquiry and the research strategy chosen. This creates a number of unusual challenges for the management of research which also bear directly on the management of institutional strengthening. Some of these characteristics are the following:

- The subject researched is multidisciplinary, including issues of engineering design, agricultural technology, biophysical processes, performance of public and grassroots organizations, management and information techniques, behaviour of households and communities, and performance targets that include considerations of efficiency, poverty, equity, gender, participation and empowerment, environmental impact, and inter-generational sustainability. Research consequently has to be cooperative.
- One of the main subjects is the operation of public and private organizations, requiring direct involvement with these organizations through "action research".



This implies a close interface between research and institutional strengthening, with the latter used as an instrument for research, and as an explicit goal in IIMI's mandate. Research and institutional strengthening activities, as well as headquarters and country initiatives, thus need to be managed as an integral programme.

### **5.3.2 Programme Organization and Management**

IIMI has organized its research in five research programmes. Research is headed at headquarters by a Director of Research who himself acts as a programme leader, and has (presently) three programme leaders under him, who in total manage the five research programmes. Research projects conducted from Headquarters are linked to specific programmes, and they cut across programmes according to their need for specific personnel. Research projects conducted from country programmes are formally listed in one of the Institute's five research programmes, but in fact are in general very loosely related to the corresponding headquarters activity, if at all. This is not always the case, however, and an increasing number of multi-country programmes are being initiated that are under Headquarters programme leader supervision and some of which involve participation of country research staff.

Research and institutional strengthening activities are integrated in country programmes, currently with presence in 12 countries and clear critical mass in two locations, Pakistan and Sri Lanka. Apart from the Director of Pakistan Programme, who reports to the DG, country activities are coordinated at headquarters by a Director for International Cooperation, to whom country programme heads report. The problem of critical mass is important, as programmes with only one international staff member absorb the bulk of this staff's time in management, and make it difficult to achieve interdisciplinarity. Continuity is often hampered by dependency on one single ephemeral source of funding. The Panel believes that IIMI has still not solved the problem of developing consistent policies for small country programmes. It needs to clearly determine where it wants to achieve critical mass and why, under what conditions it can eventually operate effectively with only one international staff, and where it can conduct country activities without resident international staff. We believe that IIMI has not sufficiently explored the latter two models for its country-level activities. In particular, focusing exclusively on locations where it can establish critical mass, an option presented by management to this Panel, would be a serious constraint on capturing many opportunities for significant research.

### **5.3.3 Planning, Monitoring, and Review of Programmes**

For the moment, the Director of Research (DR) has coordinating authority over research programmes, and he is expected to work in close cooperation with the Programme Leaders and the Country Programme Heads. Because IIMI is a small institute, there are many informal interactions between the DR and the programme leaders. Programme issues are discussed in the Programmes and Projects Subcommittee of the Management Committee, with both the Committee and Subcommittee chaired by the DG. This system has three flaws. The first is that interactions between the DR and Programme Leaders tend to be induced by management problems, as opposed to full

integration between considerations of scientific and management issues. The second is that the Programme and Projects Subcommittee also tends to be dominated by administrative matters, since it is a subcommittee of management and heavily staffed by management. The third is that decisions regarding research and IS tend to be taken separately. For instance, to this date, the DR has not visited many of the country programmes and the DIC is not involved in substantial issues of research. As a consequence, there is no formal platform where scientific matters concerning priorities for research and IS are sufficiently discussed and linked to management decisions. Now that IIMI has reached a significant size and is involved in a large number of countries, it is urgent that the scientific content of its research and IS programmes be much more systematically discussed among the main actors involved.

There is considerable formal decentralization of initiatives and decision-making to the level of programme leaders and heads, but effective decentralization that would transfer basic responsibility and authority and create a sense of ownership over these programmes is still lacking. The result is that the scientific and managerial potential of leaders and heads is not allowed to blossom.

The annual review of IIMI's programmes is conducted through the Internal Programme Review event. The forward looking implications of the lessons derived from this review are the inputs into an annual programme planning exercise which aims at adjusting the MTP, preparing research programme and country unit plans, and preparing an annual overall workplan for the Institute. For the definition of country programmes, Programme Working Groups are to be established that incorporate the country programme head, staff of the particular country unit, and programme leader(s) of the main programme(s) on which the activities are focused. This structure is, however, more on paper than in place. The Internal Programme Review has the potential for being both a valuable monitoring medium and an important means of sharing research developments and data. However, it will require a major restructuring of the sort of IPR which has been carried out in the recent years. Apart from the use of a room that was far too large and forced reliance on an unsatisfactory audio system, the meeting seemed to allow equal time for projects whose leaders were well-prepared and had something to communicate, and for those that should have been denied an audience until there was something of value to report. Additionally, much of the discussion was not of the quality and focus that a meeting of this sort warranted. Finally, of course, the cost of the IPR was excessive when one adds in the time cost of the many staff present. The Panel is fully supportive of an IPR which sets and enforces a standard of what is ready and acceptable for presentation as well as of a good standard of discussion. Conclusions from this review are inadequately translated into new directives, guidelines and incentives. Clearly, the planning and conduct of these important annual exercises, which are fundamental elements of the management of programmes, need to be seriously rethought as stated in the Recommendation in Section 5.2.3.

Monitoring of performance through the prior definition of goals and milestones and subsequent assessments of performance is an important instrument to stimulate greater achievements. However, in the field of research, this is insufficient to induce greater performance, because reasonable output levels are so difficult to predict, and because creativity is such a highly subjective concept. An important additional determinant of

performance is the quality of the work climate that prevails at the Institute. As discussed in Chapter 3, the present situation is not satisfactory. Staff morale is low, interactions among scientific personnel are insufficient, and the climate of collegiality that once prevailed when IIMI was a smaller operation has given way to individualism and sometimes cynicism.

#### **5.3.4 Proposed Changes to the Organization and Management of Programmes**

With the approaching end of contract term for the Director for International Cooperation, the issue of lack of coordination between research and institutional development, and between headquarters and country programmes, should be seriously reconsidered and redesigned. We recognize that this is a very complex issue, the resolution of which is fundamental for improved performance, but to which there is no simplistic or unique solution. In what follows, we suggest various reorganizations of the management of programmes, guided by the analyses made in Chapters 3 and 4. These are to be taken by IIMI's management and staff as inputs in participatory process of redesign.

To address the issue of the lack of scientific interactions between research programme leaders and the research component of country programmes, stated above, **the Panel recommends that the Programme and Projects Subcommittee be chaired by the Director of Research and charged with guiding research and ensuring an adequate level of publication.**

This committee would include the DR, the DDG *ex-officio* in the light of his country responsibilities, the research programme leaders, and scientific representatives of the country programme heads. The functions of this committee could be to supervise and guide the scientific content of research initiatives, make recommendations for the allocation of core funds, help define and screen proposals for contract research, monitor the overall progress of projects and the level of published output, make recommendations for staffing of programmes and supervise the scientific performance aspects of the personnel review process for research staff.

In reviewing the performance of research in Chapter 3, the benefits of greater decentralization in the management and supervision of research to the level of Programme Leaders was discussed. Implementation of this decentralization has a number of management implications including the possibility of reallocation of some support staff. Financial authority and accountability over allocated core funds and budgets for contract projects should be given to leaders and heads. They should acquire greater authority over staffing their programmes, subject to overall personnel strategies and management practices. There should also be greater expectations of aggressive initiatives by leaders and heads in defining projects and negotiating funding with the assistance of the PDO. Leaders and heads will need to learn how to use the services offered by administration in the management of budgets and in project development, in order to make more effective use of these services, and an appropriate training function should be organized by management.

In terms of programme management, the key feature of this change is that all research activities are affiliated to a programme and report to the DR whatever their location; and for all IS to be coordinated by the DDG whatever their location. The organization of Programme Working Groups, as suggested by IIMI, may help to relate IS activities and research, but we have not seen a definition of their composition and operational rules. The desired double integration will rest on the ability of the DR and the DDG (for IS) to work together and to integrate their activities both substantively and programmatically into a coherent and imaginative programme. This is an important challenge which is their joint responsibility. Ultimately, it is the role of the DG to create an environment that will make this integration occur effectively and to closely monitor its implementation.

We **suggest** that greater attention needs to be given to the prior specification of performance criteria and of milestones. These are needed to conduct programme, project, and personnel evaluations. The latter, however, inevitably rely on subjective and comparative criteria that weight relative difficulties of research initiatives and relative performances across programmes, projects, and scientific staff. A balance needs to be found between the sharper specification of goals and evaluations, and avoiding the trap of excessive bureaucratization and diversion of time and energies (Section 6.1.3).

Finally, research management has the important responsibility of creating a truly stimulating research climate that will result in enhanced performance. We stress that this will not occur without explicit attention to a set of initiatives, such as: (1) High expectations of performance which are mutually agreed upon by each individual scientist and management. (2) A work environment where curiosity, differences of opinion, and diversity of views are accepted and aired creatively. (3) Open, candid, and mutually supportive interactions between scientist and senior management. (4) A conviction that research at IIMI advances a scientist's career. (5) A continuing sense of intellectual enrichment through personal interactions and a learning environment. (6) A collegial atmosphere which places a high value on teamwork and cooperation.

## CHAPTER 6 - ADMINISTRATION AND OPERATIONS

### 6.1 Management of Human Resources

Effectively managing the human resources at IIMI is a challenging endeavour. IIMI's work force is highly diverse, composed of men and women of many nationalities, ethnic groups, and professional disciplines, based in various locations around the world. (Table 2.3 shows "Total Staff Strength -- 1989 and 1993".)

The Human Resource Office is responsible for the development and administration of IIMI's personnel policies for nationally-recruited staff in Sri Lanka and for all internationally-recruited staff. The Office, which reports to the Director of F&A, is headed by a Senior Manager (a national professional), assisted by four national staff. The style of human resource management, however, reflects the management style of the DG as well as that of other managers. This section addresses broad aspects of human resource management at IIMI, then moves to some specifics on personnel policies.

#### 6.1.1 Staff Morale

IIMI staff are committed to their work and believe that, given the resources of the Institute, there is a great potential to achieve. Staff salaries and benefits are highly competitive, and turnover during recent years has been low (approximately 5% annual average for national staff and 8% for international staff during the past four years). Nonetheless, while many staff within the organization are quite satisfied at IIMI, and report positively on the working relationships in their units, there is a strong undercurrent of staff frustration and dissatisfaction. In the view of the Panel, the sources of this discontent are complex and may be related to a number of issues, discussed in earlier chapters of this report:

- changes in IIMI's strategy and programmes, along with three moves of IIMI's location within the past few years;
- the difficult and largely uncharted subject matter;
- lack of continuity in scientific leadership and clear programme focus;
- rapid growth from a small, family-type organization in a campus-type environment to a larger one, that may have outgrown its somewhat informal management systems;
- inclusion in the CGIAR, the new demands accompanying that, and the unfulfilled expectations of the financial benefits;
- recent financial constraints and staff cuts;
- lack of consultation on important issues (e.g. national staff reclassification and senior staff cuts);



- insufficient delegation of authority, or clarity in delegation;
- lack of teamwork and collegiality.

Unfortunately, instead of finding staff unified to meet present challenges, the Panel found that they lacked cohesion and were distracted by these problems from the work they came to IIMI to do. In the view of the Panel, IIMI is not making the most of its human capital.

Clearly, guiding IIMI through this stage of its development will require strong leadership (see section 5.2), to move the Institute forward firmly on its course. One component of this will be renewed attention to the human side of the organization. While the principal policies supporting this and the values they reflect would come from the top of the organization, initiatives and responsibility for creating a positive work environment should lie - and be seen to lie - with the divisions and programmes. In this regard, managers may consult the Director of F&A, who has organizational responsibilities for and experience in this field.

Certain issues that impact heavily on morale should be addressed at an institutional level, in particular, internal communication and team-building. Concerning the former, staff at IIMI need to feel more informed than they currently do. This is particularly important during a time of financial difficulty, as individuals are concerned about the future of their programmes as well as their jobs, and rumours spread to fill information gaps. At the institutional level, the Panel suggests that the Management Committee be used more effectively to channel relevant information in both directions between Management and staff. Below this level, efforts are needed to strengthen communication within programmes/units of the organization and across these, between headquarters operations and the field, and across levels of the organizational hierarchy. Managers need to bring people together to discuss substantive issues, and to foster an environment in which people feel valued and free to speak openly, and are also willing to listen. This will help to engender better teamwork, which - while effective in some parts of the organization - needs more attention overall in order to make work groups more productive.

As noted above, the Panel links problems of morale with a host of wide-ranging issues. A number of these problems seem to stem from similar or related causes. We have gathered together our views on these, into a recommendation that we regard as the keystone of our Report.

**The Panel recommends that IIMI stabilize its organizational structure, decentralize responsibility as advised in the Report, and concentrate upon improving management for maximum effectiveness and establishing an organizational climate to stimulate excellence.**

### **6.1.2 Human Resources Planning and Development Process**

IIMI's budget and staff numbers have grown rapidly over recent years. Given the financial prospects, a period of consolidation is now needed. As IIMI clarifies its programme priorities, within the framework of the MTP and in the light of financial prospects, a plan will be required to develop the 1994 staff mix to that needed in, for example, 1998. The Panel

**suggests** that IIMI initiate a human resource planning and development process. While the DG must establish the broad guidelines and be responsible for such a process at the institutional level, the detailed inputs (to the "big picture") would come from the programmes and divisions. Considerations should include:

- Staff mix, which relates to the balance of skills, experience and support functions within programmes and divisions and across these (taking into account disciplinary balance, managers to subordinates, etc.), as well as the mix in terms of nationality balance, gender, age and tenure with the organization. Table 6.1 illustrates a few dimensions of staff mix, and how these have changed in recent years. In view of IIMI's change of mandate to "irrigated agriculture" between 1989 and 1993, it is unexpected that the numbers of agriculturalists and management staff should have declined, whilst those of engineers have increased. This may need consideration.
- Staff development, which is intended to strengthen IIMI's staff mix -- both in the interests of individuals' career goals and to meet future institutional needs -- is integral. This should include developing, through on-the-job or organized training, leadership and managerial capacity as well as technical and other skills that will enable international and national staff, at headquarters and in the field, to take on more challenges within current positions or in other parts of the organization, as opportunities arise.
- Cost implications will clearly need to be weighed at the institutional level, in terms of costs and benefits of training and development, as well as the opportunity costs associated with staffing decisions. In this regard, IIMI needs to develop explicit criteria and processes, that are public, regarding which positions require international recruitment, and when.

### **6.1.3 Staff Performance Appraisal System**

An effective performance appraisal system is an essential ingredient for successful human resource planning and development. The performance appraisal process can be a valuable tool in staff planning and review, motivation and development, and can be beneficial at the individual, programme, and institutional levels.

The 1990 Donor-Sponsored External Review noted that management had introduced "an excellent performance planning and evaluation system during the past year" for international staff. The system has now been in operation for about four years and, while the Panel considers it to be sound in form, in practice it is not being used to full advantage. For example, according to staff surveyed and/or interviewed, meaningful criteria are not uniformly established between supervisors and subordinates, nor are the appraisals consistently used as a basis for discussions of the following year's workplan. While the process may be used rigorously by some, this is not the case across the Institute. The Panel **suggests** that the process should: (a) be given more importance at the institutional level, (b) be conducted according to a schedule that is adhered to, (c) include measurable objectives for all staff, (d) link institutional goals with individual objectives, giving attention to publishing and other research outputs, institutional strengthening and the management of relationships

with collaborators, cost efficiency (e.g., adherence to budget in the first place), and management of people, (e) distinguish clearly between all different levels of performance (f) entail feedback to employees on strengths and weaknesses, so that individuals and their managers can plan a future course accordingly, (g) link personal, unit and institutional plans. The Panel recognizes that, appraising staff performance in an IIMI-context is a difficult endeavour; it considers that the current system is basically sound and that it could be used to significant individual and institutional advantage.

**Table 6.1 Staff Mix 1989 and 1993**

	1989		1993	
TOTAL STAFF COMPOSITION				
International Managerial Staff (including country programme heads)	15	5 %	18	5 %
Other International Staff	16	5 %	20	5 %
National Professionals	71	24 %	132	33 %
Other National Staff	190	65 %	226	57 %
Total	292	100 %	396	100 %
INTERNATIONAL STAFF NATIONALITIES				
North America	10	32 %	10	26 %
South America	2	6 %	2	5 %
Europe	8	26 %	14	37 %
Asia	11	35 %	12	32 %
Africa	0	0 %	0	0 %
Total	31	100 %	38	100 %
Lesser-Developed Countries	11	35 %	14	37 %
Developed Countries	20	65 %	24	63 %
Total	31	100 %	38	100 %
DISCIPLINES OF INTERNATIONAL PROGRAMME STAFF				
Engineering	10	37 %	18	55 %
Social Sciences	5	19 %	7	21 %
Management	5	19 %	2	6 %
Agricultural Science	3	11 %	1	3 %
Economics	4	15 %	5	15 %
Total	27	100 %	33	100 %

As the data indicate, IIMI's staff mix has undergone many changes in the past five years. Among others, there has been a significant increase of engineers and decrease of management and agricultural scientists (which seems odd at a time when the mission has been changed to irrigated agriculture); there has also been a large increase, among the total staff, of national professionals. While IIMI international staff are highly diverse, representing 15 nationalities, IIMI has not yet recruited any Africans to the international ranks.

The Panel was pleased to learn that IIMI has introduced two new appraisal systems for national staff in the past year, one for the professional and the other for the general staff. IIMI staff consider the systems to be sound overall, better targeted to individuals, and in general an improvement over the old system. The Human Resources Office has conducted training and provided instructions to supervisors in carrying out the appraisals; as is inevitable in such a system, implementation is not uniform. While implementation must be managed at the divisional level, the Office of Human Resources can (and intends to) help ensure that supervisors are adequately trained in the process, and that uniform procedures are followed. The Panel commends IIMI for progress in this area, and urges that the new system be used fully to encourage, identify and reward performance that exceeds pre-established output-based criteria. It **suggests** that, as a next step, the appraisal system be linked with a clearly articulated and active training and career development policy (specifically including national research staff). While staff training does occur in some parts of the organization, practices and opportunities vary.

#### **6.1.4 General Observations on Personnel Policies**

The Panel found IIMI's personnel policies and practices to be sound overall. Policies are found in staff manuals; the one for headquarters-based national staff is in the process of being revised, and the one for international staff will soon be. Staff noted ambiguities in policies that presumably will be clarified. In addition, there are policies that will require further study (such as that concerning whether to appoint national staff on fixed-term contracts or a continuing basis). Given the importance of these policies for individuals' welfare, potential changes should incorporate staff input, where practicable, and the rationale for decisions taken should be clearly explained.

The Panel also explored issues of compensation of IIMI staff. IIMI's policy is to place itself in the top quartile of "the market" for national staff, and the Human Resource Office commissions periodic surveys to ensure that the Institute stays within its range; the policy for international staff is to stay competitive with comparable (e.g., other CGIAR) organizations, and IIMI reviews their practices periodically in this regard. The data, as well as comments of national and international staff, would suggest that in this regard IIMI is a very generous employer. The Panel believes that IIMI should be competitive to attract and retain high calibre staff, but is concerned that its practices may be above the market, and overall the compensation cost structure is quite high. The Institute has already taken action in this regard, by reducing the increment levels awarded after the annual appraisal for both national and international staff (and the post allowances for international Headquarters' based staff). In addition, it has hired a consultant to review the compensation packages of international staff, relative to other CGIAR centres. If results show that IIMI's practices are out of line with those of other centres, the Panel **suggests** that appropriate changes be introduced rapidly.

In terms of gender balance, IIMI is unusual among CGIAR centres in that it has two women in the management ranks; below that level, however, there is only one woman among the international staff, and the percentage of women on the international staff, currently 8%, has remained fairly constant over the past five years. Among the national staff, women constitute about 40% of the 40 or so professional staff and about 43% of total (142) national staff at headquarters. In another part of Colombo, in the Sri

Lanka Field Operations Office, however, women constitute 6% of the 35 professional and 15% of the total (60) national staff. While these proportions reflect to some extent the number of women in these professions, in the Panel's view, there is an imbalance here that should be considered at an institutional level. The Panel **suggests** that IIMI should, as part of the human resources planning and development process described above, consider gender balance of its staff and goals in this regard for the future, given availability in different national and international labour pools. An explicit strategy should involve consideration of recruitment and other personnel policies (e.g., job-sharing). Management should also consider how it might foster a gender friendly work environment throughout the Institute, in order to help achieve its gender-balance goal.

The difference in gender balance at these two offices raises a broader issue - oversight from headquarters of national staff personnel policies at IIMI's field operations. While the Panel commends the decentralized approach IIMI has taken here, in allowing country-based staff to manage their local staff based on best local practices, the Panel believes that headquarters should practice more oversight in this regard. The Panel **suggests** that the Director of F&A (or Senior Manager of Human Resources) review the terms and conditions of staff at all country operations and examine how these have been set. The information concerning country-based staff is currently maintained in the Office of International Cooperation and, while this is sensible for programmatic purposes, for administrative purposes it should also be retained in F&A.

## 6.2 Budget and Finance

### 6.2.1 Financial Management

Since joining IIMI in January 1993, the Director of F&A has introduced several changes to improve the efficiency of the budget and finance functions she heads. The Panel found that the quality of the budget guidelines and the financial reports have improved significantly since her arrival. In addition, the Panel felt that the F&A division understands its priorities and is headed in the right direction (see Section 6.3.3).

During the period 1984-93, IIMI's funding has increased from less than US\$ 1 million to nearly US\$ 10 million (see Sections 2.4 and 7.5). This represents a compound rate of growth of approximately 26%. During the period 1984-93, IIMI generated an operating surplus in all years except 1989-91, when it incurred a loss. IIMI's current ratio (current assets/current liabilities) during the past four years have ranged from 1.32 to 1.47. Although IIMI's target for the current ratio is 2.0, the Panel has no concern about IIMI's ability to meet its short-term financial commitments.

IIMI has been sensitive to the importance of overhead recovery, and its overhead cost recovery as a percentage of direct cost has steadily increased from 1.96% in 1987, to 12.26 in 1990 and to about 24% in 1993. The increasing trend in overhead cost recovery is an excellent indicator of IIMI's financial management, since it should lead to improved cost control through more complete assignment of costs to the appropriate cost centre. The Panel is pleased to note that among the CGIAR centres, IIMI has one of the highest overhead recovery rates. However, during the three year period 1990-1993, IIMI's



headquarters' overhead cost as a percentage of direct cost has increased from 33% to 38%. (This increase was mostly on account of adding the DDG and a portion of the compensation of the Director of Research, Director of International Cooperation, and heads of PDO and Information to the overhead calculation.) The Panel **suggests** that IIMI should carefully monitor and control its overhead expenses to maintain and improve its competitive edge among its donors.

During the Panel's stay at IIMI, a consultant visited to develop cost efficiency indicators to gauge IIMI's cost structure, to help the Institute understand trends (such as fixed and variable costs) and make better informed management decisions accordingly. The Panel agreed with the preliminary conclusions and recommendations of the consultant and believes they should be implemented. The Panel **suggests** that IIMI senior management, as a priority, continue to initiate new measures to ensure that IIMI's financial resources are used effectively and efficiently.

In order to involve staff in cost containment, management is in the process of planning and establishing a Cost Cutting Task Force. This is expected to include staff from all sections of the organization who will work together to find opportunities for cost reduction. The Panel **suggests** that the mandate of the task force should be expanded so as to address not only cost cutting, but efficiency and effectiveness maximization. Based on the Panel's observations concerning the weak level of internal communication at IIMI - and the fact that many staff have perceptions (sometimes wrong) of waste in other areas of the organization - such a task force could be of value in clarifying misunderstandings, identifying savings, and commenting to management on related cost matters.

### 6.2.2 Integrated Planning and Control Systems

Although IIMI has adopted the CGIAR procedures for planning and control systems, in the Panel's view, IIMI's 1994 MTP has not been translated into medium-term project priorities, projects in the pipeline for funding, and project milestones for current projects. This has resulted in managerial objectives that are moving targets. Consequently, commitment to and clarity about the 1994 Medium-Term Plan has declined. The Panel met with many employees who said that they would prefer IIMI to accept any one plan and get down to implementing it. The Panel **suggests** that the DG should recognize the possibility of flat funding, and ask the Programmes and Projects Subcommittee (see Section 5.4) to develop a clear set of project priorities with such a scenario. The DG should also clarify soon the details of operations that will continue, continue in a different way, or be closed. The current uncertainty about IIMI's future operations is a major distraction and is a hindrance to IIMI's progress.

IIMI's project-based budgetary controls provide essential information (monthly and annual reports by selected categories and a transactions journal to help trace the source of costs allocated) both to project managers and programme leaders. However, better controls are needed to prevent the over-spending of budgets. The Panel **suggests** that procedures need to be strengthened and managers with budget responsibilities need to receive a clear signal that they are going to be held accountable for their performance against budgets.

IIMI's monthly and annual project reports are not being utilized as management tools. They are used frequently to verify the accuracy of the costs allocated to their area of responsibility, but the Panel found that some but not all managers understand how to use the reports to utilize project resources effectively. The Panel is pleased to learn that the Director of F&A is planning to upgrade the project reporting system by installing a proven software system that is more user friendly and flexible. In the Panel's view, IIMI should educate non-financial managers and proactively take steps to encourage more discussions between F&A and the users of project reports to enable the F&A to improve its service to internal clients.

The Budget Subcommittee of the Management Committee is currently chaired by the Director General. Concomitant with the observations in Section 5.2 to decrease the DG's workload, the Panel **suggests** that the Budget Subcommittee be chaired by the Director of F&A. The Budget Subcommittee can serve as an effective forum for cooperation and collaboration during the budgetary process among the senior management group. In addition, by making the budgetary targets more specific and output-related, the Budget Subcommittee can contribute to increasing IIMI's effectiveness and efficiency.

### **6.2.3. External Audit**

In June 1989, the Board approved the appointment of Coopers and Lybrand to act as IIMI's external auditors, and have annually renewed the appointment. The Executive and Finance Committee holds an annual closed session meeting with the external auditors to review their external auditor's Management Report. Based on a closed session meeting with three representatives of the external auditor, including the past and new partners-in-charge, the Panel is fully satisfied with the process and content of the external audit.

The Panel **suggests** that IIMI's external and internal audits should be better linked by ensuring that each year's external audit verifies, among other things, satisfactory implementation of the internal auditor's recommendations. The external auditors should also be given an opportunity to provide inputs to the Board to identify priority areas for internal audit.

### **6.2.4. Internal Audit**

Based on a cost-benefit analysis, the Executive and Finance Committee of the Board, on management's recommendation, appointed an external firm, KPMG Ford, Rhodes, Thornton & Company, to conduct its internal audits. The Board was actively involved in discussing the role of internal auditors and they approved the appointment of the current internal auditor. Internal audits are conducted in accordance with a yearly audit plan, proposed by the internal auditor, and modified as needed by the DG. The Executive and Finance Committee had an opportunity to review the 1994 Internal Audit Plan before it was finalized.

Each quarter, the internal auditor submits a report to the DG. During its December meeting, the Executive and Finance Committee reviews a summary annual report from the internal auditor. Based on a review of two quarterly reports submitted by the internal auditor and IIMI's Annual Internal Audit Plan, the Panel is satisfied with

IIMI's approach to improving its internal controls. The Panel **suggests** that the Board should utilize internal auditing efforts to better fulfil its fiduciary responsibilities by having an annual closed session meeting with the internal auditors and by participating in the selection of projects to be undertaken by the internal auditors.

The focus of the internal auditing efforts has mainly been in the compliance testing area i.e. verifying the adequacy of internal controls. The Panel **suggests** that the Board should selectively utilize the internal auditor to conduct operational and management audits to obtain an independent and objective assessment of the scope for improving specific operations.

## **6.3 Support Services**

### **6.3.1 Administrative Services and Facilities**

#### **6.3.1.1 Administrative Services**

In addition to its functional responsibilities for human resources and financial management, the Finance and Administration division provides services in transport, maintenance, travel, conference coordination, purchasing and supplies, office support (telecommunications, mailing, etc.), government liaison in Sri Lanka (for logistical matters), leasing housing for international staff, and negotiating and overseeing contractual services at headquarters (staff cafeteria, janitorial, gardening, and security).

The F&A division is very visible at headquarters, as approximately 50% of national staff there work in F&A. Perhaps as a result, there is a perception that this division has expanded at the expense of IIMI's research programmes. The data would suggest that this has not been the case. During the period from 1989 to 1993, while -- in real terms - IIMI's total budget increased by 29%, research programme expenditures rose by 43% and F&A declined by 5% (using data in Table 2.1 and assuming 4% annual inflation). The Panel commends management for cost containment in this area.

When the new Director of F&A assumed office in 1993 she reorganized the division, streamlining the structure to give herself fewer direct reports, in order to move her concentration from operational to more strategic divisional matters, including the initiation of studies and measures aimed at improving the quality and reducing the costs of services.

The Panel did not study the efficiency or quality of services in the different areas. In general, while certain departments perform better than others - and there may be opportunities for improved efficiency - users are satisfied overall with service quality.

In terms of the management of the division, the Panel was pleased to note that there are monthly meetings of the Director and department heads, work programmes seem to be understood well, and communication appears good (although improvements should be explored at the lower staff levels). Since 1993, the division has prepared an operational workplan. The plan specifies goals and objectives by department, a time

frame, and resources required. The workplan for 1993 appeared to be well thought out and used to monitor progress against objectives, with a focus on improving effectiveness and efficiency. Thus far, cost savings have been identified in assorted areas (e.g. transport, e-mail), and efforts are expected to continue.

During 1994, the Director of F&A will be working with F&A department heads to develop performance indicators for their work (that are expected to be tracked on a monthly basis) - an idea that, the Panel believes, should be considered for implementation in other divisions in IIMI.

Outside of IIMI headquarters, each IIMI field office is responsible for its own administrative arrangements and reports to the Director of International Cooperation on these matters (except for IIMI-Pakistan, which is accountable to its Director on these matters, who reports to the DG). With the exception of IIMI field offices in Sri Lanka and Pakistan, country offices contain only one to two international staff, for whom administrative matters consume a great deal of their attention - particularly in the light of the often difficult conditions in which they work. Based on discussions the Panel had with staff (and comments written in response to the Panel's staff survey), there should be opportunities to improve these arrangements. In order to explore possibilities, the Panel suggests that the Office of International Cooperation, in consultation with the Director of Finance and Administration, organize a meeting with all out-posted staff during their next visit to headquarters, to address general management-related concerns of this group of staff and develop a joint action plan for improvement.

#### **6.3.1.2 Facilities**

Headquarters. Unlike the larger CGIAR centres, IIMI does not have a campus with experimental fields. Its facilities consist primarily of the headquarters building outside Colombo (purchased by the Government of Sri Lanka for IIMI and made available to the Institute at a rent of US\$ 1 per year), and rented (or shared) office facilities in country-based operations. The building outside Colombo, which IIMI has occupied for about two years, is well laid out, spacious, attractively decorated, and provides an excellent working environment.

Developments in Pakistan. The Memorandum of Agreement between IIMI and the Government of Pakistan indicates that the Government will provide IIMI with a building for its operations in that country. IIMI has been renting space in Lahore that, while not ideal, appears comfortable and adequate for the Programme's needs. At its meeting in April 1993, IIMI's Board of Governors reviewed a proposal for the construction by the Government of Pakistan of a new building designed for IIMI (which will cost about US \$1.8-2.0 million and be financed as part of a World Bank loan), which IIMI would lease upon its completion. The Board resolved that the construction cost (including internal construction and outfitting) and operation of the new building must be cost neutral to IIMI; if this condition cannot be met, the Board instructed management to continue to lease its offices in Pakistan.

In mid-1993, the Government of Pakistan began construction of the building. The plan for the main office building is quite impressive and, despite some scaling-down of

the original plan, still appreciably larger than the current space; IIMI would occupy less than half of it. Expenditures associated with moving in and operating the building are still uncertain, as are opportunities for revenue IIMI might be able to generate by renting out unused space, until a lease arrangement is worked out. The Panel, like the Board, believes that IIMI should not enter into a lease unless it is cost neutral and, in addition, provides an adequate balance of security and flexibility for the Institute's operations.

### **6.3.2 Information Services**

#### **6.3.2.1 Publishing and the Review Process**

The Communications Division has done a good job at implementing IIMI's policy on publications, in printing an array of types of in-house publications, and in distributing materials to a reasonably wide audience. IIMI publishes the following in-house materials (in parentheses is the number of publications between 1984 and 1993):

- Scientific research materials: monographs (8), research papers (13), country papers (Malaysia 1, Nepal 3, Pakistan 6, Philippines 2, Sri Lanka 11, or a total of 23), conference proceedings (19), project reports (2), working/discussion papers (28).
- Extension materials: IIMI Review (twice a year), FMIS Newsletter (14), newsletter of the Research Network for Irrigation Management for Crop Diversification in Rice-Based Systems (IMCD, 3), West Africa Newsletter (3).
- Administrative and public relations materials: annual reports, donor-specific materials, management briefs (4), brochures, public-awareness materials.

The number of publications has increased steadily over the years, with a total of 25 in 1993 for all the categories above. Those are, however, modest numbers for an institute of IIMI's size. The IIMI Review is published in English, Spanish, and French and the FMIS Newsletter in English and Spanish. The first is printed in runs of 5,000 and the second of 1,750. For monographs, 1,000 copies are printed.

In the Panel's view, IIMI maintains too many types of publications. There is insufficiently sharp distinction between publications, too much heterogeneity in presentation within the same series, and often an insufficient number of issues in each category. We suggest that a more clear distinction needs to be made between publications directed at a scientific audience and publications for the community of irrigation managers and policy makers.

For the scientific community, priority attention should be given to strengthening the monograph series which, besides journal articles and commercial books, should be IIMI's main scientific outlet with strict quality control. For this purpose, we suggest the following:

- IIMI should appoint a Publications Review Committee that has full responsibility for implementing and actively participating in the review process. According to



the current review policy, the review of monographs is "to be determined in each case by the Director of Research" which the Panel finds inadequate. Membership to this committee should be on a rotating basis. Responsibility of this committee is not only to insure quality control in the monograph series but also to assist authors improve the quality and the presentation of their manuscripts.

- The review policy should be explained in the monographs and the names of the members of the review committee given. This should replace the current disclaimer of IIMI's responsibility for the contents of published materials. Ultimately, the DG must in principle have final responsibility for publications from IIMI.
- For each monograph reviewed, at least one referee selected by the Publications Review Committee should be from outside the Institute.
- The format of these monographs needs to be homogenized and they must be numbered sequentially so they can be easily identified by external readers.
- Research papers should also be refereed but in a more expeditious and simple fashion.
- More incentives should be given to publish research results in the refereed monograph series, as opposed to publication in non-refereed country papers and project reports or more lightly refereed research papers. Most research papers and country papers are in fact already of monograph length. The number of monographs published has been insufficient, with 0 until 1990, 3 in 1990, 0 in 1991, 2 in 1992, and 3 in 1993.

Conference proceedings should be differentiated. For conferences which are aimed at policy makers and practitioners, one-page briefs for each presentation should be prepared before the conference. Conference proceedings should only be published for those conferences with a professional audience at which significant research or policy papers have been prepared.

Publication of the *IIMI Review* is the direct responsibility of the Head of Information and the DG. It is a high quality review that circulates widely information about IIMI's achievements. Only one issue has been published in 1993. It appears difficult to maintain a flow of materials derived from research results to support the Review. We suggest that oversight for the Review, as well as for the publications programme in general, should be formalized by appointment of an Editorial Committee (noted below) in order to enlist greater commitment in the Institute for the provision of materials as well as for general oversight of the Institute's publications performance.

The *FMIS Newsletter* is an important and successful enterprise started in 1990 which has grown to link 1,357 irrigation professionals from 77 countries. Published twice a year, it is now the shared responsibility of Headquarters and the Nepal office, and the Newsletter is assembled in Nepal. A survey of readers' opinions indicated strong satisfaction and interest by respondents. However, it is not clear that this network has a

clear vision of where it is going and what it will be trying to achieve in the future (see Chapter 4).

The Panel **suggests** that IIMI put much greater effort into sustaining a flow of high quality scientific publications, both in-house publications and in the international peer-reviewed literature.

**The Panel recommends that an Editorial Committee, and a Publications Review Subcommittee, be appointed to manage IIMI's publications and ensure quality.**

In this regard, clear information should be given to all professional staff that periodic publication in the monograph series, in addition to refereed journal articles, is a fundamental requirement in a CGIAR Centre.

#### **6.3.2.2 Library**

The services IIMI's library is offering can be summarized as follows:

- Development and implementation of a resource base of books, journals, serials and newsletters in the field of irrigated agriculture, irrigation management, economics, social sciences, water resources management and related topics;
- Assistance in the development of an irrigation management information network (IMIN) database;
- Publication of a two-weekly library contents page bulletin containing facsimiles of title pages of periodicals for distribution to IIMI's country staff;
- Inter-library services to the 24 agricultural libraries of the Sri Lankan universities and research organizations; and
- Free access to outside users.

The library services are run by a team of motivated and dedicated staff, consisting of the head librarian, two assistants, a documentalist and an assistant documentalist. The latter two have as primary task entering new additions to the IMIN- and library database.

The library contains about 4,000 books and as many reports and reprints. The number of journals available is 150, of which 80 are received on an exchange basis, and 70 purchased. Due to the increase of the subscription fee of most journals, the budget available for books is decreasing, since priority is given to maintain the resource base of journals. The latter is a good policy since journals are the first resource of information for the research staff to keep in touch with the newest publications. The immediate consequence, however, is that the number of recent books is decreasing. The research

staff submit their requests for new books to the librarian, and he consults with the Information Office and the Finance and Administration Office, before orders are placed.

The IMIN-database contains bibliographic information of literature on irrigation management and related subjects available in the libraries of 38 international organizations, institutes and other CGIAR Centres. From the IMIN-database, IIMI derives annually a selected bibliography on irrigation management. Up to now, 6 volumes, containing a total of 11,098 citations on irrigation management and related disciplines have been published. The citations contain the following information: an entry number, title of publication, collation, keywords, location of the publication and an abstract. The citations are classified according to generalities, social sciences, pure science, technology and irrigation management. The new additions to the library are stored in a similar way in the library database. The library has also access to the following outside databases: AGRICOLA, AGRIS, AQUALINE, CABI, CCOD, CD-DIS, Engineering & Applied Science, SOILCD, TROPAG + RURAL, and WRA. These databases, in addition to the journals, are a very important source of information.

The library receives about 200 newsletters from various institutes and organizations. A routing procedure is in operation through which the newsletters are passed to the research staff in HQ. The procedure is developed in such a way that research staff see only those newsletters which are of interest.

Another interesting service developed by the library, which is very much appreciated by the country-based staff, is IIMI's library contents page bulletin. This bulletin contains copies of title pages of periodicals and is distributed every two-weeks to country staff. The content of the bulletin is based on the personal requirements of the individual researcher.

In addition, the library is integrated into two local networks, AGRINET and ENVIRNET. AGRINET networks the 24 agricultural libraries of Sri Lanka, and ENVIRNET is a network linking all institutes and organizations in Sri Lanka engaged with the environment. IIMI's library takes a leading role in both networks, and organized in 1993 at IIMI a one-week workshop for the participants of AGRINET.

The library, albeit situated within IIMI's HQ, supports the research staff at the HQ and the overseas country projects to the satisfaction of the users. The staff attached to the library seem to be adequately trained, well equipped with computers and electronic media, and certainly not oversized in staff number for the workload they carry.

### **6.3.2.3 Computers**

IIMI headquarters has a rather large PC platform, consisting of about 80 personal computers, which over the past year have been upgraded from XT to 486 machines. In addition, most of the research staff possess a powerful portable computer, which facilitate their work when in the field or abroad. Preparations are underway to integrate the PCs in a LAN network, starting with the research group. The foregoing will certainly assist IIMI in better utilizing its data resources, but more importantly the network will offer research staff the opportunity of having direct access to E-mail. At present E-mail is

available only at one station, located in the Communications Office. Infrequent use is being made of this facility, by which the research staff more easily could interact with the outside scientific world, at low cost. Through E-mail the research group will also have the possibility of consulting databases of outside libraries and institutes.

The computer infrastructure is served by the Computer Services Office. If problems cannot be solved internally, outside services seem to be amply available within Colombo. The moment that the PCs are linked in a network, this service or specialized people from outside should be asked to offer IIMI's administrative and research staff short training sessions in the proper use of the network's hardware and software.

IIMI's research staff is actively working with basic software packages for text and data processing, and the statistical analysis of field data. There is a clear need for the use of more domain specific programmes (in the field of irrigation management and engineering), and the processing of geo-referenced information. For the latter a variety of GIS-software, with varying degrees of complexity, are available. GIS-software enables the user to better process information for small (an irrigation scheme), medium (a watershed) and large (world) scale studies. So far, only the ILWIS GIS-software has been used in one of the country projects (Pakistan).

Other computer packages used in country projects are software for the hydraulic simulation of open channel flow, water and salt balance models, models for the planning of irrigation schedules, management information systems, management simulation models, linear programming packages, and expert systems. Over the past eight years IIMI staff have been exposed to about 20 different software packages. The introduction of software was most of the time done with the help of an external intervention (consultant, country project, etc.). Unfortunately, due to lack of continuity in personnel and staff interest many of these software packages are not actively used.

There is considerable scope for the use of software tools and other advanced information technologies (e.g. CD-ROM's) in research and training. However the senior research staff at Headquarters does not seem to fully appreciate the relevance and utility of information technology as a tool with which the research work can be given a more quantitative dimension.

As IIMI gets more actively involved in environmental studies, and the system-wide water management programme, the need for data handling and simulation modelling will increase. The modelling applications will range from simple simulations (e.g. soil water balance computation) to the modelling of very complex systems (e.g. hydraulic routing of water flow in branched canal networks). The use of models will require monitoring, processing and interpretation of large sets of primary and secondary data. To be able to do this in an effective way it is desirable that IIMI develop capacity in the handling and processing of large sets of data including statistical processing. Data handling and the use of summary and process oriented lumped models might require with time the introduction of more advanced hardware and software, which in turn will require a stronger support unit for computer services. Ideally, the Centre should have a proper strategy for computer developments, to ensure that the Centres needs are met in the most effective and timely way. In principle, IIMI needs a staff member who is highly skilled in

## CHAPTER 7 - INSTITUTIONAL RELATIONSHIPS

### 7.1 Overview

A collaborative approach to improving irrigated agriculture is clearly needed as IIMI cannot do all that is needed in this area itself. More important, the process of getting improvements accepted and instituted requires involving a wide variety of persons, especially in developing countries, in rethinking practices, technologies, criteria, incentives and goals. This calls for a strategy for engaging appropriate persons and institutions in collaborative efforts, as suggested in Chapter 3 with regard to research and also in Chapter 4 on institutional strengthening.

IIMI is refocusing its efforts from irrigation and irrigation system management to deal with irrigated agriculture, and this requires stronger linkages to agricultural research and development institutions than before. IIMI cannot increase staff extensively in the agricultural sciences, which means that given its mission and resource limitations within the CGIAR system, it must work more effectively with other CGIAR Centres. TAC's nomination of IIMI to coordinate a system-wide initiative on water management research makes developing such linkages more urgent.

### 7.2 Relations with National Institutions

IIMI's most important relationships, given its mission, are with a variety of institutions in developing countries, such as irrigation agencies, departments of agriculture, research institutes, universities, NGOs, and water user associations. Strategically, IIMI aims to improve irrigated agriculture by working with national-level institutions that can increase water use efficiency, raise agricultural productivity, preserve natural resources, and alleviate poverty. Work on irrigation management requires working with functioning institutions in real-world settings, so IIMI's association with cooperating national institutions is not an attempt to move into adaptive research, but is intended to where appropriate knowledge can best be generated.

The Panel's country visits indicated to members that overall IIMI has established good working relations with a number of key national institutions wherever it has a programme. IIMI staff are to be commended for having built a sense of partnership with many collaborators. However, we noted some areas in various countries where problems should be addressed or anticipated.

The Role of Consultative Committees. These have been established for most country programmes, and their members are normally appointed by the Government of the country. For the most part, Consultative Committees (CCs) are made up of prominent and knowledgeable persons who understand IIMI's mission, so that the Committees are a valuable source of ideas and support for an expanded and improved programme. Sometimes the Panel heard members expressing a feeling that their views are not solicited as frequently or as fully as they would like. The most extensive CC



participation appears to be, not surprisingly, in Sri Lanka, though there was confusion about whether CC members here would make inputs to IIMI's programme generally or just to the Sri Lanka programme.

Some CC members are *ex-officio* and may show less continuity and interest than desirable. The Panel recognizes that all major actors in the irrigated agriculture sector (and in research on this sector) need to be represented. But to operate successfully, a CC needs to have at least a core of well-connected, knowledgeable, committed and continuing members. This means that the majority of members should have substantive concerns and not serve simply *ex-officio*. Given their interests and their institutional roles, CC members may not always attach much importance to generic research, stressing instead short-term action and policy needs.

IIMI needs to balance these expectations and demands, being sufficiently responsive to identified national and local issues while maintaining a broader comparative perspective on its mission. CCs offer an important "reality check" on IIMI's programme. Their support is essential for mobilizing financial support for country programmes, but they should do more than just endorsing proposals for IIMI activity. The Panel **suggests** that country programme heads and CC members reach a consensus on what contributions the latter can and should make. Where a country programme head has close relations with a broad-based and active CC, the chances of IIMI having visible impacts in a country are greatly increased.

Linking Agriculture and Irrigation. In some of their country visits, Panel members found somewhat less than full cooperation between departments of agriculture and those of irrigation. Where IIMI started its programme in a country by working with one agency, this seemed to make the other less interested in supporting IIMI's work. It has been hard for IIMI to become engaged equally with both agriculture and irrigation agencies, even though that is what its mission requires. The distance between these agencies is one of the realities of life, and it is often necessary to work also with the planning ministry as a third party concerned with irrigation research and policy reform.

Recognizing these tensions, IIMI has to find ways to establish a broad agency base of cooperation wherever it works. This is all the more important as IIMI begins to work more on upstream and downstream issues, such as watershed management or the maintenance of water quality, making linkages with departments like environment or health also relevant. Cooperating with other CGIAR Centres like IRRI or IFPRI can help in this as they have complementary linkages with government departments other than irrigation, the agency with which IIMI tends to have the closest connections.

Funding Country Programmes. It is encouraging that occasionally country programmes are funded from project loans from donor agencies to the national government, thus increasing the total pool for research, but the Panel has observed a certain unhappiness that IIMI is there operating not with its own funds but with government funding. Especially when IIMI is mostly doing research, this creates some resentment, unless the research is regarded as meeting government needs.

As donor agency funds become scarcer, IIMI may face increasing difficulty in getting cooperating governments to channel donor assistance to support IIMI research. Governments would like IIMI to bring its own funds, which is often an unrealistic expectation. This will make it more difficult for IIMI to launch country or cross-country research initiatives solely to meet its own priorities. Where IIMI's agenda is similar to that of senior officials, as in Pakistan, this problem should not arise. Difficulties in getting host governments to agree to IIMI getting project loan funds are increased because IIMI's overhead rate is considered high.

Possible Competition with National Capabilities. Achieving IIMI's second goal can be impeded when an IIMI programme in a country becomes an alternative, and thus a competitor, to national institutions for giving advice and undertaking research on irrigation management. This is not intended, but can result unless IIMI's programme is thoroughly collaborative with national professionals and institutions, so that governments look to IIMI and its partners together rather than to IIMI instead of its partners.

IIMI must be careful not to drain off top national talent. Recruiting such persons may appear justified by IIMI's need for 'top class personnel', especially if they cannot be very productive in their present institutions. Getting professionals on secondment, where they can enjoy the intellectual stimulation and opportunities of association with IIMI, but where they expect to return to their original institutional base, is a very attractive option, if it can be arranged.

The Panel cannot offer any general advice on this matter, but we are concerned that IIMI should not achieve short-term successes for its own programme at the expense of long-term development of national capabilities. We stress therefore the need for IIMI to consider long-term human resource development as part of its programmes for research and institutional strengthening.

Linkages with Universities. IIMI activities have had input from university staff in most of the countries where it has programmes, though only in the Philippines and India did we find very explicit efforts to involve and strengthen universities as part of meeting IIMI's second objective. While most universities in developing countries have definite weaknesses, these need to be redressed to build up national capacities for irrigation management research. This presents a dilemma because IIMI needs to be producing first-rate research at the same time that it improves the capabilities of national researchers.

Since universities are training most of the next generation of leaders in the engineering, economics, agronomy and other fields that will contribute to irrigated agriculture, it is important for IIMI to help make what is taught as current and relevant as possible. Some tradeoff can be accepted in terms of increased cost and possible delays in completing research in order to improve experience and skill of national counterparts. But IIMI cannot accept poor final research outputs, and must take steps when working with counterparts to ensure that the quality of its work remains high.

Survey Results. A survey was conducted by the TAC Secretariat of over 300 individuals in various institutions in South and Southeast Asia, West Asia and North Africa, Sub-Saharan Africa, and Latin America in connection with this review (see

Appendix IV). As noted in Chapter 3, the response rate (14%) was low, but not unusually so for a mailed questionnaire. Respondents were not very impressed with IIMI's research to date, assessing it on average as "moderately valuable" - 3.0 on a 5-point scale. The presentation of materials was generally considered quite good but the quality was regarded as uneven, reflecting the lack of quality control discussed previously in this report.

More enthusiasm was expressed for the areas IIMI has focused on in its Medium-Term Plan as directions for future research (see Chapter 3). Respondents considered these subjects on average "very important" - 3.7. The comments of respondents, giving qualitative feedback, were mostly quite positive, as can be seen in Appendix IV. Not surprisingly, those who have had more involvement with IIMI's programmes regarded IIMI's past and projected work more favourably. The results of the survey supported the observations of Panel members during country visits that IIMI enjoys a great amount of good will within the national institutions it needs to work with.

### **7.3 CGIAR Centres and Other International Organizations**

The development of IIMI relationships with other CGIAR Centres is gaining momentum after a slow start, especially as arrangements for regional cooperation are being worked out. The new IIMI programme in Latin America is being given administrative support in Mexico by CIMMYT, and CIAT has offered to host an IIMI office for work in Colombia. CIAT welcomes IIMI participation in the hillsides agroecosystems consortium that it heads, encouraging joint research on institutional development (participatory organization of watershed and irrigation system users, which IIMI is involved with in Sri Lanka), strategic research (on economic and ecological impacts of irrigation in changing hillside land use patterns), and on plant-soil-water relationships. CIP is also interested in IIMI working with its consortium that seeks to improve sustainable production in Andean hillside regions (where irrigation is often an important factor). Whether IIMI has or will have the staff to follow up on these opportunities is quite uncertain.

ICRISAT and IIMI have already established a collaborative arrangement whereby the IIMI staff member who has been working in Nigeria is based at ICRISAT's office in Kano, enjoying the same logistical support, privileges and immunities as its own staff have, with IIMI reimbursing ICRISAT for all costs related to the IIMI programme in that country. This is an example of how overhead costs can be saved with advantages to both centres. ICRISAT and IIMI have discussed collaboration also in Asia but this has not proceeded very far.

ICARDA and IIMI have worked out a specific understanding of how their respective research programmes should complement each other. ICARDA focuses on the efficient use of irrigation water at the farm level, on producing germplasm that is efficient in its water use and tolerant to saline conditions, and on cultural practices that conserve water in the soil. IIMI, on the other hand, deals with assessing and improving the performance of whole irrigation systems, seeking to improve the management of water distribution and delivery to the farm. Both centres are concerned with increasing crop

returns per unit of water rather than area cultivated. IIMI and ICARDA are presently considering cooperation in work on regional farming systems in the Nile Valley of Egypt, to take more than an on-farm water management perspective.

WARDA and IIMI have agreed to consider joint action under the proposed inter-centre initiative on water management in West Africa, envisaged to start in 1995. Both would be founding members of a consortium to implement this programme, with IIMI posting a staff member as part of WARDA's Sahel programme. This appears to be a low-cost way for IIMI to maintain some kind of programme in West Africa even if its country programmes in the region, which the Panel had reservations about, are discontinued after present funding expires. WARDA is considering a proposal to participate in a consortium programme with IITA for sustainable use of inland valley agroecosystems in sub-Saharan Africa. In the past, IIMI and IITA have had very limited cooperation.

IIMI has yet to become involved with the IRRI-CIMMYT joint programme on rice-wheat farming systems in Asia, though clearly irrigation management has a great bearing on the performance and sustainability of these systems. All three centres express interest in working together on this, but so far IRRI and CIMMYT have proceeded to work with NARS in India, Pakistan, Bangladesh and Nepal, but without IIMI input.

IRRI and IIMI cooperated between 1987 and 1991 in a Rockefeller Foundation-funded collaborative research project on Irrigation Management Options for Rice-Based Farming Systems, with field studies conducted in Bangladesh, Indonesia and the Philippines. IRRI and IIMI are cooperating in a training programme with the Kasetsart University of Thailand on irrigation water management during 1994, with the initiative coming from IRRI. The Panel would have hoped IIMI could play a more active role in this.

IFPRI and IIMI signed an open-ended MOU in 1989, which provided, among other things for a jointly appointed staff member who worked on irrigation sector and management policy. Complementary interests and capabilities have been identified, though the Panel can see potential overlap and conflict in the area of local management of irrigation systems and irrigation sector policy issues (water rights and common property management). The two institutes are currently consulting on how to proceed in ways that are mutually and jointly productive. It is important that IIMI and IFPRI work out a clear division of labour.

ISNAR and IIMI have had a number of discussions about collaborative opportunities, especially in the area of impact assessment of institution building activities and training methodologies. These two centres are often regarded as similar because they are subject matter rather than factor or commodity oriented. ISNAR and IIMI agree that their respective assignments to improve the management of agricultural research and the management of irrigation systems have quite different objectives, though there can be cooperation on common methodologies and techniques for institutional strengthening. They have some overlap in that one of IIMI's goals is to strengthen national research capabilities for irrigation management research.



CIFOR, ICRAF and ICLARM see potentials for collaboration with IIMI, but no formal collaboration has been worked out.

IBSRAM, the International Board for Soil Research and Management, based in Thailand, which is concerned with soil management in the tropics is not a CGIAR-supported centre but it is similar enough for us to consider it in this section, because its mandate can intersect with IIMI's where soil and water meet. Its 1990 initiative on management of lowland clay soils for upland crops after rice involved IRRI as well as IIMI. This never got funded and has lapsed, but IBSRAM continues to express interest in working with IIMI on soil-water management problems of mutual interest.

ICIMOD, the International Centre for Integrated Mountain Development, headquartered in Kathmandu, is working on integrated agriculture in the greater Himalayan region, since irrigation on these hillsides and valleys is critical for food security. ICIMOD has cooperated informally with IIMI/Nepal in its work on hill irrigation and FMIS. Especially as the CGIAR system takes an agroecosystem approach, more interaction with ICIMOD may be useful. ICIMOD has recently broadened its geographic mandate to cover also the Andean region, where it has been suggested that IIMI should become involved with the CGIAR consortium led by CIP. This will require analysis and evaluation of irrigation management under hillside conditions that are different from most places where IIMI works.

There appears to be considerable willingness among most of IIMI's sister CGIAR institutions to work with it. A tendency often noted among CGIAR Centres is to focus on their own programmes, seeking recognition of their unique accomplishments while endorsing collaboration in principle, but this seems to be muted. Perhaps this is a response to the need for centres to find partnerships to maintain their levels of programme activity in the face of financial strictures. Whatever the reason, IIMI appears to face a welcoming world within the CGIAR system. Whether it will take advantage of these opportunities remains to be seen. So far, IIMI has not gone far beyond the MOU stage in negotiating joint programmes. The staff appointment funded jointly with IFPRI, mentioned above, is one specific case of cooperation,

There can be a contradiction between the CGIAR/TAC current emphasis on both planning and cooperation because Centres always have a complex collaboration/competition relationship. Centres are required to formulate carefully planned and detailed programmes so that they can be held accountable for achieving their own stated goals. At the same time they are expected to collaborate with other centres. When one centre could help another achieve its goals, there is little incentive to do so unless the second centre could be equally helpful for the first to achieve its goals. This incentive situation reinforces centres' disposition to be preoccupied with their own programmes. The CGIAR and TAC may need to use financial incentives to get cooperation where they judge this necessary for attaining overall CGIAR objectives.

Systemwide Programme on Water Management Research. TAC has proposed this new programme, nominating IIMI to be the convening centre. It is expected to facilitate cooperation with and among other centres such as IFPRI, ICARDA, WARDA and CIMMYT. The programme has already been provisionally allocated a budget by the



CGIAR which by 1998 should reach US\$ 1 million (in 1992 values). The programme would focus on efficient use of increasingly scarce irrigation water for crop production, as well as on resource degradation issues such as salinization and waterlogging. The initiative would treat water resource management in a comprehensive sense, relating environmental and health issues to the planning and assessment of water management. A Systemwide programme would consider the effects on irrigation of upstream watershed management, which could involve ICRAF and CIFOR, as well as the effects downstream of water management practices and the use of agrochemicals. These practices affect soil and water quality and aquatic resources, for example, which are of concern to IBSRAM and ICLARM within the CGIAR. Since they also affect human health, this would require bringing in agencies that are outside the CGIAR system like WHO, IUCN and UNEP.

The Panel endorses this proposal and believes it is valuable for IIMI to have been given responsibility for initiating work in this broad area. There are important issues to be dealt with in a collaborative research programme on water management (more than irrigation management): conservation and protection of groundwater, safeguarding domestic water supplies and improving sanitation (which are issues particularly affecting women), impacts of hydropower generation and other non-irrigation water uses, preserving environmental resources with water treated as one of several, common property management (which IFPRI is already working on including water), and public vs. private decision-making.

Because the scope of this proposal is very broad and complex, IIMI needs to undertake some serious initial discussions among its staff to begin framing the effort. IIMI's SCOR project in Sri Lanka is probably unique within the CGIAR System for addressing in an integrated and operational way a number of the issues relating to water and watershed management. SCOR can provide IIMI with more substantive knowledge and experience to contribute to this TAC initiative.

#### **7.4 Advanced Institutions**

One of the themes which many CGIAR Centres are sounding is that they need to forge closer linkages with "centres of excellence" which are at the leading edge of technological and organizational development. IIMI is in a position where this is very important because its present and future staff capabilities are limited relative to the task it has.

The Panel was surprised that IIMI had not established more working relationships with universities in the more developed countries. Several of these have cooperated with IIMI in the past, but there is no evident strategy for benefiting from and contributing to the expertise that these institutions have. Alongside universities, particularly in Europe, there are a number of research institutions and professional organizations that should be associated with IIMI in an ongoing manner. These institutions, like universities, face severe financial constraints these days, so their involvement in IIMI programmes cannot be assumed to come "free." If certain collaborative possibilities are valuable for IIMI's programme, the Institute needs to be prepared to put some resources into following them up. If they are not useful, collaborative arrangements should not be entered into.

We are not issuing a broad call for "collaboration," knowing that it entails costs as well as benefits. As suggested in Chapter 4, IIMI needs to formulate selective and purposeful strategies for interaction with universities as well as other institutions in more developed countries. There needs to be clear agreement on the research agenda to be advanced, on the comparative advantage which each party brings to the agreement, on the benefits that each expects from the collaboration, and on the costs each is willing to bear. With appropriate planning and follow-up, IIMI can benefit greatly from such arrangements. As noted in Chapter 3, we had expected that IIMI would be taking more advantage of academic institutional linkages, for joint research projects, sabbatical leaves, visiting lecturers, graduate students, thesis research, and so forth.

IIMI already has a number of connections with professional and technical organizations concerned with irrigation, though few have been made very operational or beneficial. The premier association is with ICID, the International Commission on Irrigation and Drainage. This provides an excellent forum for discussing research results. Its Secretary General is in New Delhi which makes communication and visiting relatively easy. IIMI and ICID have had a MOU since 1988, and the ICID President has been an invited observer to IIMI Board meetings. Before a new MOU in 1993, contact between IIMI field staff and ICID national committees was very limited, but that is now being changed. The ICID-IIMI MOU identifies a number of areas of common interest: women in irrigation, farmer participation (IIMI will play a role in the 1996 ICID conference in Cairo highlighting this subject), management of change in irrigation agencies, management of financial resources for system sustainability, and irrigation strategies for river basins/watersheds. An ICID connection, especially if it brings national committees closer to IIMI country programmes and vice versa, is valuable.

There are various professional organizations for disciplines like economics and engineering with which IIMI staff should maintain contact in their roles as researchers rather than simply as representatives of IIMI. IIMI should encourage its staff to attend professional meetings. This is an important means for keeping IIMI staff aware of advances in the different disciplines, as noted in Chapter 3. No formal agreements are necessary for IIMI, as staff should keep up these connections in their personal and professional capacities.

There are several connections with institutions in Europe that are valuable to the extent that IIMI has the personnel to participate with them. ILRI, based in the Netherlands has long-standing linkages with IIMI. Several sister institutions are relevant to IIMI now: the Winand Staring Centre for Integrated Land, Soil and Water Research; the Institute for Soil Fertility Research; and the Institute for Forestry and Nature Research. These Dutch institutions are quite well disposed to work with IIMI and are already linked with the Land and Water Departments at Wageningen University, which has some informal association with IIMI.

Parallel to ILRI in the United Kingdom is HR (Hydraulic Research) Wallingford, particularly its Overseas Development Unit formed in 1973. This institute has fairly regular interaction with IIMI and has sponsored some joint activities in Sri Lanka, most recently a workshop organized with IIMI/Pakistan in Lahore on "Canal Seepage and Lining." This particular example is important because Wallingford's professional

standing among engineers, especially British-trained ones, helped gain acceptance of IIMI's research findings on this controversial subject.

In Britain, the Natural Resources Institute (NRI) and CABI have cooperated with IIMI though there are no formal ties. NRI sponsors a Wetlands Action Group that is quite relevant to IIMI's concern with the environment and sustainability, working on the management of water regimes in wetland rice and the use of fish in rice fields and irrigation systems. IIMI has been using the data bases and technologies which CABI provides in support of agricultural research including research on irrigation and irrigated agriculture. This national institutions has strong capabilities in communication and information technology which IIMI could benefit from.

An active institution is CEMAGREF (Centre National du Machinisme Agricole, du Génie Rural, des Eaux et des Forêts) in France, which has developed joint programmes with IIMI in Pakistan, Sri Lanka and Morocco. It cooperates with CIRAD, the Centre de Coopération Internationale en Recherche Agronomique pour le Développement, which has similar interests in irrigated agriculture, especially in Francophone West Africa. One of its researchers was recruited to represent IIMI in this region for four years, based in Burkina Faso. At present, a memorandum of agreement among IIMI, CIRAD, CEMAGREF, ORSTOM (Institut Français de Recherche Scientifique pour le Développement en Coopération) and INRA (Institut National des Recherches Agronomiques) is being planned to cover collaborative activities on a formalized basis. CIRAD has offered to cooperate with IIMI through CORAD, le Conférence des Responsables de la Recherche Agronomique Africains, which could be a vehicle for IIMI to further its second goal of building up national research capacity.

In parallel to connections established with institutes in Europe, IIMI has developed over the past years links with 8 US organizations. The nature of the collaboration is very variable and rarely long term; it ranges from collaboration in the organization of workshops to the realization of joint studies and research projects. The joint activities with Cornell University were the formulation of IIMI's research directions and priorities in 1985 and collaborative country specific field research, which was initiated in 1989. IIMI signed a collaborative agreement with Winrock International Institute for Agricultural Development in 1990 to share experiences and to cope more efficiently with the research challenges in the field of irrigated agriculture. In 1990 IIMI started working with Sheladia Associates on the Irrigation System Management (ISM) project in Sri Lanka. With the USBR (United States Bureau of Reclamation) and the Washington State University a collaborative study was conducted on the irrigation management in the Columbia Basin Project. Similarly, IIMI was requested by ISPAN (Irrigation Support Project for Asia and the Near East) to undertake research for the Irrigation Management Policy Support Activity (IMPSA) in 1990/1991 in Sri Lanka. The cooperation with Indiana University consisted of the development of a database for the comparative study of irrigation organizations and methodology in Nepal in 1992, and the organization of a workshop in March 1993 in Nepal on "From Farmer Fields to data fields and back". Also in 1993, a cooperative study was initiated with the University of California at Davis on management performance of irrigation systems. With the CADSWES (Center for Advanced Decision Support in Water and Environmental Sciences of the University of Colorado) IIMI collaborated in the organization of two workshops in Peshawar and

Lahore in April 1993, to demonstrate Decision Support Software for water resource management.

An additional category of institutions for possible collaboration in advanced countries includes consulting firms and engineering bureaus. Many of these have capabilities in irrigation technology, design and construction, but relatively little in irrigation management, operation and maintenance. IIMI would probably have an enthusiastic response if it offered training for the staff of these organizations in state-of-the-art approaches to irrigation management. Such firms are eagerly seeking contracts from donor agencies and national governments to implement projects that are increasingly focused on problems of management rather than construction. Relatively inexpensive diffusion of better ideas and practices could be possible through these private sector bodies.

UN agencies represent a special set of advanced institutions, being responsible to the whole world community for technical assistance and development. FAO has the largest involvement in irrigation management, taking programmatic initiatives through its Land and Water Development Division. FAO has been invited to attend IIMI Board and Programme Committee meetings as an official observer since its inception. FAO and IIMI are presently planning a jointly sponsored conference on irrigation management transfer to be held in China. Though both organizations maintain friendly relations, no major cooperation has resulted so far. Possibly FAO could take on the responsibility for publishing regularly worldwide statistics on irrigated agriculture, or help to draw international attention to issues and findings that IIMI would like emphasized. This requires ongoing communication with FAO (see annual IIMI/FAO/GTZ meetings) so that it can help to mobilize world opinion in support of irrigation improvement.

IPTRID's overall mandate is focused on the technological development of irrigation and its research thrusts are (i) modernization of irrigation systems, (ii) improving technologies for maintenance, and (iii) sustainable land and water use through drainage. IPTRID's programme on the modernization of irrigation systems is very much complementary to IIMI's Programme 5: Sustainable Management of Water Delivery and Disposal and the cross-cutting theme on Choice and Use of Technology. Further points of common research interest are related to waterlogging and salinization. However, the approach followed by both is different. Whereas IIMI is conducting its research close to the irrigation system, IPTRID establishes linkages with agencies involved in research so as to promote adaptive research and use the findings or methodologies. Over the past years several contacts have been established between IIMI and IPTRID, but so far these contacts have not resulted in a clear strategy for collaboration. Given the uncertain future of IPTRID further actions along this line might cease. The Panel believes that whatever the future of IPTRID, its experience can reinforce the technological dimension of IIMI's mandate.

This review of collaborative possibilities does not recommend any specific partnerships for IIMI. It indicates that there are attractive opportunities for IIMI to engage with experienced professionals in many fields supporting irrigation management and irrigated agriculture. As indicated for university cooperation, IIMI needs to have a clear idea of what it seeks to accomplish from any collaboration, with some analysis of



expected benefits and costs and some expectation of what net benefits will be sufficient for the partners to keep up the relationship.

## 7.5 Donor Relations

IIMI was quite literally a creation of the donor community, with the Ford Foundation giving the strongest support, that recognized that irrigation management represented one of the most promising areas to achieve gains in agricultural productivity. Donor support has continued to be strong, as IIMI's budget has continued to grow until this year. Its funding level has increased steadily from approximately US\$ 2.0 million in 1985 to close to US\$ 10.0 million in 1993.

One can see from Table 7.1 the amounts and relative shares of donor contributions to IIMI over the five-year period under consideration. From 1989 to 1993, total donor support increased by 68%. The top three donors, USAID, the Ford Foundation and the World Bank, increased their contributions by 20% in this period, but their share of the total fell from 59% to 42% because other donors raised their funding by 140% in just five years. Unrestricted funds in this time have gone up 92%, with their share of total funding rising from 29% to 34%.

**Table 7.1 IIMI's Funding by Donor (US\$)**

Donor	1989	Donor	1993
USAID	1,702,319	USAID	1,823,597
Ford Foundation	1,174,204	Ford Foundation	1,360,400
World Bank	618,700	World Bank	1,000,000
Subtotal as % of Total	3,495,223 59%	Subtotal as % of Total	4,183,997 42%
ADB	567,116	Germany	959,425
Rockefeller Foundation	353,041	ADB	904,839
IFAD	305,618	Netherlands	907,513
Netherlands	271,797	CEC	749,000
Subtotal as % of Total	1,497,572 25%	Subtotal as % of Total	3,520,777 36%
Top 7 donors	85%	Top 7 donors	78%
Top 10 donors	95%	Top 10 donors	93%
<b>Total</b>	<b>5,883,543</b>	<b>Total</b>	<b>9,888,974</b>



Diversification of donor support is one of the noteworthy aspects of IIMI's institutional relations. The number of donors in this period rose from 13 to 20. This reflects effective efforts by IIMI management to mobilize funding, organized through its Office of Donor Relations and Project Development (PDO), and the continuing importance of irrigation management for agricultural and economic development worldwide. It also reflects a shift in donor thinking from funding new irrigation projects to favouring rehabilitation and improving O&M. IIMI has found a "niche" within the international development community, even within a more competitive environment. Its portfolio of funded projects now includes both larger grants and longer-term grants.

With current donors, the Director General and the head of PDO take the lead in nurturing relations, while trying to attract also new donors. Country programme heads are expected to interact with donors at the national level. This degree of decentralization, with country heads taking more initiative than in many other CGIAR Centres, represents a strength of IIMI.

The World Bank remains a supportive institution, appreciating the importance of IIMI's mandate. IIMI also has good relations with the Asian Development Bank (ADB), the African Development Bank (AfDB), and the Inter-American Development Bank (IDB), so that it has opportunities for support across the developing world.

The multilateral banks are not regarded by IIMI just as a source of funds, but as influential actors in the development arena. Their decisions affect national policies and practices to a considerable extent. Some recent decisions by the ADB to reshape its planned project in Pakistan to reflect the research findings of IIMI that physical lining of canals is less cost-effective for saving water and improving distribution than is selective desiltation, represents the kind of input to improve resource allocation decisions which IIMI is able to make. IIMI has made similar contributions to ADB and World Bank thinking in Nepal on the value of building farmer management into new or rehabilitated systems rather than superimpose new physical and management structures that ignore existing (though informal) organizational arrangements.

Because most of IIMI's work has been in Asia, its relations with the ADB are best developed, though it has support for its West African programmes from the AfDB. IIMI's new programme in Latin America is funded by the Ford Foundation, but it is anticipated that IDB will assist in its expansion. Clearly in the present funding climate for all development efforts, IIMI will need to continue making strong and effective efforts to maintain relations with multilateral and bilateral institutions. There should be opportunities to attract new donors including ones within the CGIAR that have not yet begun to fund IIMI work. A major challenge to IIMI in the coming years will be to design its long-term aims so that they are congruent with the donor needs.

## 7.6 Conclusions

Overall, IIMI has been quite successful in its external institutional relations. The Panel has no specific recommendations to make in this area, though we would highlight in conclusion some of the suggestions made above. It must be always remembered that

collaboration has costs, not just benefits. Thus collaborative relations should be entered into only with considerable forethought. Criteria and expectations need to be established in advance so that activities are not guided by post hoc rationalization.

Since the benefits of collaboration usually come over time, with continuity, such relations should be planned and maintained for the long run. Short-run cooperation is always an option, if both parties understand it as such and distinguish it clearly from long-run collaboration. IIMI should aim to become the centre of a set of productive collaborative arrangements so that it is the institution to which others look for leadership in this area.

There are already more opportunities for IIMI to collaborate with national and international institutions than it can usefully take up. The Panel advises IIMI to be selective in its relationships so that these tie into and reinforce its programmatic themes. There can be some generalized relationships, as with ICID, which cut across theme areas. But IIMI needs to build up strength and productivity in its chosen areas, so collaboration should contribute to them.

IIMI has to make better use of outside expertise in universities, professional associations and other institutions. IIMI has been slow to do this, partly because of other priorities, and because developing meaningful relations requires time, effort and resources.

## CHAPTER 8 - THE SPECIAL ISSUES

This Chapter includes material that we particularly wish to emphasize, or that is of special interest to IIMI's stakeholders, such as the CGIAR and other donors, NARS, national irrigation and other collaborating agencies and the wider irrigation community. Also, it includes instances of the ways in which IIMI might profitably develop in the future.

### 8.1 IIMI within the CGIAR System

IIMI entered the CGIAR System early in 1991, after a period of discussion of water-related initiatives within TAC. This is a major step for any Centre, and it must necessarily require important changes. Some of these may be difficult, but the benefits are also significant. They are mainly in the opportunity to participate in CGIAR collaborative processes, and some financial advantage is also to be expected. In fact, the entry of IIMI and four other Centres has coincided with the onset of financial pressures that are severely constraining the CGIAR budget, and with other changes that are clearly not yet completed. This is an interesting time to be entering the CGIAR, as it is clear that one of the main strands in the new developments will be the large expansion of inter-Centre and beyond-Centre collaboration, as in ecoregional mechanisms and cross-system initiatives. This section assesses how IIMI has fared in the time since it entered the System, and how well it is now prepared for the demands that will be made upon it.

When it entered the CGIAR System IIMI was strongly oriented towards practical impact and 'relevance'. This produced a culture in which researchers worked close to the irrigation system and its practical problems. There is no doubt that this has been widely appreciated, and that IIMI's reputation in its host countries rests largely on this willingness to work in the field on real problems. The Panel commends this, and this aspect of IIMI's culture must not be lost. However, innovative strategic science was not given the same attention, and IIMI has very few achievements in this area. It is clear that the CGIAR System expected the balance to be redressed after IIMI entered it in January 1991.

The Panel sees it as an important part of its task to determine whether this process is progressing satisfactorily. It feels that there is rather little evidence as yet that the process has begun, or even that its importance is fully appreciated by all IIMI staff on the Programme side. On the organization and management side IIMI's practices are compatible with CGIAR practice. The Centre has as yet no research groups of fully international standing, though some individuals are well known and respected. The percentage of publications going into the peer reviewed international literature has not markedly increased, nor is there any apparent increase of such publications that are in the pipeline. We could not find any new projects specifically started as a response to the need for more strategic science after entry into the system.

On the other hand, essential and major organizational changes have taken place, such as the development of the new Strategy for the 1990s and the 1994-98 Medium-Term Plan, including the new Programme structure, and the Panel finds that these are valuable documents that can guide IIMI development for the next few years. Indeed, our main recommendation is to ensure stability for a time by leaving these plans and structures unchanged, except for such changes as are made necessary by financial and other changes in the CGIAR. It would have been highly desirable if the strengthening of strategic science could have occurred at the same time. However, management was clearly stretched to the limit, and the situation was not helped by the fact that, despite their good qualities, no member of IIMI's upper management at that time had a major research experience. With a Research Director with appropriate experience in post, the upgrading of strategic science must now be given maximum attention. The Panel notes that efforts are now being made to accelerate the process, but it is not convinced that it will run smoothly unless action is taken to improve research management in general, and to give overriding priority to scientific quality. The Panel discusses this in Chapter 5. It urges the Board to give this matter its direct attention, as it must be the foundation of a successful research organization. It is essential that IIMI shall be able to show evidence of a substantial change in this direction within 5 years of joining the CGIAR, and the Board could formally review the situation then, in addition to giving special attention to the subject in the intervening period.

The other aspect of the entry into the CGIAR System is in the additional opportunities for collaboration with other parts of the System. The Panel believes that more could have been done to develop such relationships. However, it notes that there are now several emerging initiatives with WARDA, CIAT, CIMMYT, IRRI and IFPRI and encourages IIMI to press these vigorously. If IIMI is to be the convening centre for a Systemwide water management initiative, the Panel believes that it needs to get considerable experience of inter-Centre collaboration rapidly. Other Centres will not readily forgive a lack of follow-up in a large collaborative project.

## **8.2 Research Management and Science Quality**

All staff and Centres in the CGIAR System are faced by the twin demands of relevance and of scientific quality, and it is obvious that this sometimes causes confusion amongst their staffs. Naturally some staff tend more towards one or the other in their work, but even the most 'relevant' staff member should be able to produce papers for peer reviewed journals, and even the most academic theoretician should produce concepts and ideas that are useful in applications.

The Panel believes that the research culture of IIMI needs to change, to produce more strategic science, more achievements and finally greater impact. This is dealt with in Chapters 3, 5 and elsewhere. There are two main aspects.

The first is to get all research staff - including those in country programmes - to accept and embrace the usual signs of top class research: a constant exchange of ideas in seminars and elsewhere, an ambitious pressure for achievement and the respect of ones peers, publication in the journals of highest reputation and high awareness of recent and

relevant work elsewhere. Success must vary for different people, but there should be no doubt of the target that should be aimed at, which is just as appropriate for applied as for strategic research.

The second point is more locally specific. Research scientists should have a firm and supportive framework within which to operate, but inside it they should have maximum delegated responsibility for their work and for their funds. The delegation should only be overridden for very good reason, but they should be clearly accountable for their time, their funds and their results. The characteristics we emphasize most are clarity, consistency and stability of objectives and responsibilities, which give the best chance for innovation to develop. The Research Director carries a heavy personal responsibility for establishing the right style and culture in IIMI Programmes, in which researchers and research are valued, but he cannot do this without the committed support of the DG in attaining his objectives and the full cooperation of his programme leaders.

### 8.3 IIMI's Mission and Objectives

IIMI has altered its Mission statement during 1992, from one that emphasized management to one emphasizing irrigated agriculture. The Panel broadly agrees with this, on the grounds that the delivery of water is itself of little value, unless it is used for efficient agricultural production. On the other hand, its three goals, (Section 2.3.1) make it clear that its focus remains on management and policy-making, and the programme structure carries the same message. There are some consequences of this that are discussed in Chapter 3. Most of the research is done in the field with real systems, and involves local organizations and farmers. It is less easy to achieve scientific rigour in this way than in subjects that allow fully controlled experimentation, but there is no alternative if the results are to have impact.

The most important immediate objective for IIMI is to show maximum impact of its work. This is both because that impact is extremely important to its host countries, and because it needs to show its supporters and donors that it can deliver. This is examined further below.

The term 'irrigation management' is not easy to define accurately, so it is not surprising that there are many interfaces and overlaps with other organizations. To fulfil its mission IIMI needs to rely on a number of collaborators.

Despite our endorsement of the new mission statement, IIMI currently does not have significant capacity to do agronomic work nor do we believe that it should develop it. In its field work with irrigation systems, it has often collaborated with agriculture departments. This should continue. In addition it needs to develop a more formal relationship with other CGIAR Centres with agronomic capacity, where the CGIAR System has made large investments in agricultural research capabilities. The most obvious is IRRI, but there are also WARDA and CIMMYT. IIMI should not continue with work in West Africa except with such collaboration.



There is an important interface with irrigation technology. It appears obvious that the availability of particular technologies will affect the possibilities of management, and vice versa, but IIMI has always kept away from direct work on irrigation technology development. This is clearly correct, and it makes the relationship with IPTRID and ICID particularly important. However, IPTRID has only been funded for a further two years. IIMI could not possibly afford to take on any further obligations without secure funding, and it is a very different type of organization to IPTRID. Possibilities of combining the two organizations have been raised with the Panel, but for these reasons it does not regard it as a practicable option. IIMI should however still further strengthen its links with ICID, as a means of maintaining contact with the irrigation technology community. The President of ICID has observer status on IIMI's Board, so the relationship is already well founded. If IPTRID is not able to continue, IIMI could explore the setting up of an appropriate structure with ICID.

As a natural resource centre, IIMI must have an interest in developing links with organizations working on soils, hydrology and climate. Soil studies are frequently found in the national agricultural research organizations, and they will be particularly useful for site-specific local information. The conditions in irrigated soils are rather unusual. IRRI has a tradition of work on the chemistry of irrigated soils, and IIMI should keep in close touch with it.

One of the most interesting interfaces lies within IIMI. It is commonly found that it is difficult to integrate staff with socioeconomic and biophysical disciplinary affiliations. Its mission has forced IIMI to do this, and the Panel noted that IIMI staff interacted sufficiently, across this particular divide. This is a strength to develop in the future. The future planning of the Programmes should aim to ensure that there is always some mixing of staff with these two different backgrounds within a majority of the Programmes.

In following its mission, IIMI has a particularly good opportunity to show that interdisciplinary research can be successful and have impact, whereas it is so often given lip service, but avoided in practice. It does mean that a substantial fraction of the staff have to invest the effort of learning something of neighbouring disciplines in addition to maintaining their own, and that a good team spirit has to be established. IIMI has made a good start on this, and we urge it to persevere.

#### **8.4 Impact and Achievements**

The mode of operation of IIMI makes it more likely that it can show impact - an influence on in-country activities - rather than achievements - more strategic scientific discoveries - and this was indeed the conclusion of the Panel. A recently prepared first draft of an 'Achievements and Impact' document was judged to be unimpressive by both the Panel and the Board, and it is fair to say that the initial impression of the Panel was gloomy. However, as the Panel penetrated further into IIMI's work, and had the opportunity of speaking to staff and officials in host countries, it gradually moved to the conclusion that there was indeed a reasonable amount of impact. Much of it was of an unquantifiable nature, such as that the views of country staff had been changed, but it was undoubtedly real, and more evidence of identifiable changes in operations and policies are

being produced. There is no doubt that IIMI staff in the main host countries are respected and influential, and it is difficult to believe that this could be true without there having been an impact. However, the Panel believes that IIMI should make every effort to quantify and demonstrate its impact further.

Some achievements can also be identified with certainty, including publications that have high citation numbers and are widely regarded as important, but many more are needed.

Our concern is that it took so long for us to feel that we had reached a true appreciation of the real facts. IIMI does not have the talent of informing the world of its successes, despite its excellent Information department and its many in-house publications. IIMI needs to think very hard about this problem, because if the Panel had had less time, it might have come to a different conclusion.

### **8.5 IIMI's Country Programmes and its Relationship with National Agencies**

IIMI has had staff in 11 countries, still has them in 8 countries on a permanent basis, and is considering in a more or less definite way placement or other collaboration in 4 more. This clearly disperses staff and cannot contribute to maintaining critical mass on any site. We question whether IIMI has thought carefully enough through this policy and its implications for IIMI's further development.

These units range from the long established Pakistan programme, which is shortly to take over its own permanent building, to single individuals outposted in three West African Countries where it is difficult to proceed with a structured programme of work. All of these groups are benefiting the irrigation activities of their host countries, to various extents, and its relationship with them ranges from acceptable to very good. However, our visits convinced us that much of the work, particularly where there was only a single IIMI staff member, was basically extension, or could equally well have been done by a commercial consultant. The funding source is virtually always complementary funding, and the end of the term of any grant raises managerial and personal problems. We are not sure that the host country staff involved always understand the conditions under which the IIMI staff are working and are funded, and disappointment with the limited IIMI input was often encountered.

The Panel believes that IIMI and its Board should reappraise this part of their activities. IIMI should only post staff to another country if there are particularly favourable opportunities there either for a specific research programme, or for major impact within a moderate time. The precise goals of such a posting should be defined before it is agreed, and the posting should be terminated after review, if these are not being achieved. It should always be borne in mind that many research projects can be carried out without resident staff, as we describe in this section.

The operations in Sri Lanka and Pakistan are in a special category, because of the need and opportunity for research there, the large investment of effort that IIMI has already made, and the fact that these provide excellent examples of two major types of

irrigation system. In both countries there is good evidence that IIMI's work is appreciated and supported at high levels. In Pakistan population pressure will demand the upgrading of the irrigation system and its management methods fairly soon, and IIMI is in a good position to help. In Sri Lanka there can be close interaction between the Sri Lanka Field Office and IIMI headquarters, so that critical mass is readily maintained.

## 8.6 Water Management and Environmental Issues

Water management is expected to become steadily more important as the demand for water begins to exceed supply in more and more areas. TAC recognised this in 1993 by proposing a Systemwide initiative on water management research, with IIMI as the convening Centre, that would cover irrigated cropping systems research, watershed management, human health issues and downstream environmental problems. The consortium necessary to carry out such a task would need to be selected from those CGIAR Centres that work with irrigated agriculture (IIMI, IRRI, WARDA, CIMMYT, IFPRI and ICARDA). However, the designated envelope of the initiative stretches well beyond the scope of the Centres alone, and it is not entirely clear if the full suite of international organizations exists that would ideally be required. If so, the participation of national and regional organizations is doubly important. For health aspects, the World Health Organization would be the first point of call. Watershed management suggests a number of organizations, particularly those involving land use. These would include ICICOD, ICRAF and CIFOR, and the World Meteorological Organization would have relevant information. National agricultural, forestry or conservation agencies would also be valuable partners. For downstream problems, it is less easy to identify the obviously relevant organizations. ICLARM would be important for fish farming and similar activities, and the IUCN would have interests across the whole range from watershed to river delta, particularly where wetlands are affected or uplands are deforested.

The experience of IBSRAM would certainly be relevant to the wide-ranging problems of soils in a watershed context, and it could have a major role in coordinating the work on upland, irrigated, saline and alluvial soils, possibly as an associate centre. As IIMI has limited expertise in soils, an early approach to IBSRAM seems indicated. Contact with the relevant parts of the International Geosphere-Biosphere Programme would give important benefits, particularly its Core Projects dealing with terrestrial ecosystems and with the hydrological cycle. Economic, social and policy questions must be strongly addressed, and this will require collaboration with IFPRI, and possibly a direct link with the World Bank and regional banks, as major funders of irrigation schemes.

The key to the success of such an initiative lies in the arrangements for inter-Centre and interagency collaboration. It will most surely fail if all that is produced is an agglomeration of acronyms, all expressing in general terms their willingness to collaborate. We believe that an influential steering committee, with control of some funding, adequate supporting staff and a degree of managerial control is a minimum, but at present it is not known how such an initiative would operate. It appears that a 'convening centre' is mainly expected to initiate action and to provide administrative

support, and the Panel could see this responsibility being well discharged by IIMI, because it has been impressed by the quality of its administration.

The advent of the water management programme has raised the stakes in IIMI's environmental work, though it has always had some interest in the subject, and it is included in one of the four cross-cutting themes. In many ways environmental issues now have a higher profile than questions of food security on a worldwide basis, and the Panel feels that, despite several discussions at Board level, IIMI could have moved more rapidly to develop a sufficiently wide approach to sustainable irrigation management and irrigated agriculture. So far its approach is on a narrow front, and is basically confined to its well-established interests in salinity and waterlogging. Other aspects of increasing importance include the release of 'greenhouse gases' (methane and nitrous oxide) from flooded soils, impacts on biodiversity both in the irrigated area and outside, siltation, erosion and downstream water quality. The Panel would not suggest that IIMI start detailed work in these subjects, but rather that it ensures that it has got, or can easily obtain, all necessary collaboration, information and advice. In that way these issues can be integrated into its approach to management, and given whatever appears to be the appropriate weight in economic or management terms. For example, IRRI has detailed work underway on methane generation from rice fields, and IIMI should keep closely in touch with this.

The problems of water quality seem particularly likely to increase in importance. We argue in Chapter 1 that the only way to enhance food security is to intensify irrigated agriculture in the developing world. This means heavier loadings of fertilizers and agrochemicals on the soil, and the possibility of greater movement of these into the subsoil water and downstream water courses. IIMI should ensure that it has, or can call upon, expertise in the movement of these materials in the environment. This should not be too difficult, because the underlying theory is similar to that of the movement of salt in saline soils, with which IIMI is already very familiar. The Panel recognizes that it is suggesting yet further action at a time of financial pressure, but it believes that a long delay would mean a lost opportunity.

## 8.7 IIMI's Future

Every Review should question whether the Centre should continue at all. We have no doubt that work is urgently necessary in IIMI's subject and that there is no clear alternative to it in the world at the present time.

However, it is not obvious that it should remain as a free-standing Centre. In particular, during this period of turbulence in the CGIAR, there have been suggestions that it should combine with ISNAR and IFPRI, on the basis that all deal to some extent with management and therefore are similar.

The Panel has not had the opportunity of studying the other two Centres in detail, but good sources of information have been available to it. Based on our work, we do not see much similarity between IIMI and the other two Centres - it is probably less than between the various plant breeding Centres in the CGIAR. IFPRI operates much more as

an academic department or 'think tank' than IIMI, which is firmly grounded in the practice of irrigation. ISNAR is still largely a service Centre, addressing the needs of agricultural research organizations rather than agencies. In both cases there are some overlaps, and fruitful interfaces, and in both cases there is a fair amount of contact already. However, on the basis of the Panel's information, it has decided that it cannot produce any convincing argument for an amalgamation with IFPRI, ISNAR or any other CGIAR Centre. It believes IIMI to be fully viable on its own, if it seizes the opportunities that are so obviously present.

## 8.8 Conclusion

IIMI can clearly have an important future, and we hope that our advice will help in this regard. It is working on a subject that, by any calculation, is critical for food security in the 21st century. Agriculture throughout the world has to move from a rough and ready operation to a precisely managed industry, and this is most clearly true of irrigated agriculture. In Chapter 1 we make some rough estimates of the size of the improvements in yield that need to be made.

IIMI, therefore, has ample potential to make impact, and it has to pursue this energetically. We have found that IIMI can already point to useful impact in its first 9 years, but it needs much more to convince its supporters that it has attained success. It also needs to improve strategic science and science quality, without which it will soon run out of new innovative approaches. We believe IIMI can do all these things, and expect it to show this at its next Review.



## ACKNOWLEDGEMENTS

The members of the External Review Panel wish to express their sincere appreciation to the Board, management and staff of IIMI for their cordial, frank and full cooperation throughout the Review. The arrangements made for our visits to the Headquarters, and for the field visits in Sri Lanka, Pakistan, India, Indonesia, Philippines, Nigeria, Niger and Burkina Faso were excellent. We appreciate the assistance received from IIMI's country staff and cooperators, who met with us and openly shared their views. The background documents prepared for the Review by IIMI were wholly satisfactory.

Dr. Roberto Lenton, Director General, and Dr. Khalid Mohtadullah, Deputy Director General and the Liaison Officer for the IIMI Review, fully cooperated with the TAC and CGIAR Secretariats throughout the Review, from its planning stage through to completion of this Report. They were ably assisted by Ms. Vasumathy Somasundaram during the entire period of the Review. We express our grateful thanks to them for ensuring that our work could be done under optimal conditions at all times.

We gratefully acknowledge the help received from several of the staff of the TAC and CGIAR Secretariats during the Review. We are particularly thankful to Selcuk Ozgediz for guidance on management aspects; to Ms. Ingrid Hagen at the CGIAR Secretariat for help in the compilation of the information from the survey of IIMI staff; to Mrs. Jennifer Kitching-Parise at the TAC Secretariat for helping in organizing the Review, and for compiling the information from the survey of national institutions on IIMI's past and future programmes; and to Ms. Marioara Lantini at the TAC Secretariat for her valuable assistance and logistical support during the course of the Review.

We express our special thanks to Mrs. Irmis Braun-Castaldi, of the TAC Secretariat, and Ms. Avril VanderSay and Ms. Veronica Lumanauw, both of IIMI, for the superb work they did in the preparation of this Report.

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Developing country experience in Middle East, Africa, Latin America and Asia in research training, and as scientific and technical adviser to irrigation and drainage projects in many countries. Publications include four books, 70 scientific papers, 30 conference papers, 25 extension papers and 20 technical reports.

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Honours and awards include Kellogg Fellowship in Health Care Financial Management. As a trainer and speaker, he has worked with participants from over 40 countries and a variety of professionals from different functional areas and industries. Member of the 1992 External Review of INIBAP.

**TERMS OF REFERENCE FOR EXTERNAL REVIEWS**

**OF CGIAR CENTRES**

**BACKGROUND**

The Consultative Group on International Agricultural Research (CGIAR) has charged its Technical Advisory Committee (TAC) with the responsibility of conducting External Programme Reviews (EPRs) of those International Agricultural Research Centres (Centres) that it supports financially. The CGIAR has assigned a similar responsibility to its Secretariat for External Management Reviews (EMRs).

TAC and the CGIAR Secretariat normally discharge these responsibilities by commissioning either separate panels or a joint panel to conduct the reviews. In commissioning panels, neither TAC nor the CGIAR Secretariat delegates its responsibility for reviews, but both use panels to facilitate the process. Panels submit their reports for consideration by TAC and the CGIAR Secretariat before they are transmitted to the CGIAR. While the main recommendations made by panels are normally endorsed both by TAC and the CGIAR, such endorsement cannot be presumed by either the panels or the Centre under review. Equally, as autonomous institutions, Centres are not obliged to implement the endorsed recommendations. In practice, however, they usually implement most, if not all of them.

**PURPOSE**

Through its support of International Centres, the CGIAR aims to contribute to increasing sustainable crop, livestock, fish and tree production in developing countries in ways that improve the nutritional level and general economic well-being of low-income people. The purpose of external reviews is to help to ensure that the Centres continue to implement strategies and programmes that are relevant to these goals; that they maintain or enhance their record of achievement; and that they are efficiently managed. In these ways, external reviews reinforce mechanisms of accountability within the System.

EPRs and EMRs are also essential components of the CGIAR's integrated planning process. The context in which they are undertaken is to be found in the document "Review Processes in the CGIAR".

**THE REVIEW**

Against this background, the panel is requested to make a thorough and independent appraisal of the Centre and all its activities, following the broad topics below, as well as the appended list of questions and guidelines. Panels are encouraged to set their findings in the broader context of the CGIAR System, where this is relevant to the activity or programme under review.



**A. Recent Evolution of the Centre**

Important changes affecting the Centre since the previous external review.

**B. Mandate**

The continuing appropriateness of the Centre's mandate in relation to the mission and goals of the CGIAR.

**C. Strategy and Programmes**

The policies and strategies of the Centre, their coherence with CGIAR strategies, and the mechanisms used for monitoring and revising them.

The extent to which the Centre's strategy is reflected in its current programmes; the rationale for any proposed changes by the Centre and their implications for future activities.

The quality of current programmes and activities.

**D. Centre Guidance, Values and Culture**

The overall effectiveness of the Centre's Board of Trustees in governing the Centre, and the effectiveness of leadership throughout the Centre.

The Centre's guiding values and culture, and their influence on the Centre's performance.

**E. Programme Organization and Management**

The mechanisms in place at the Centre to ensure the excellence of the programmes and cost-effective use of resources.

The adequacy of the Centre's organizational structure, and the mechanisms it uses to manage and coordinate its research programmes and related activities.

**F. Resources and Facilities, and their Management**

The financial resources available to the Centre in relation to its present and future programmes.

The land, laboratories and services available for supporting the programmes.

The Centre's human resources.

The Centre's information resources and facilities.

**G. External Relationships**

The Centre's relationships with national research systems <sup>1</sup> in developing countries.

Collaboration with advanced institutions in research and training, in both the public and private sectors.

Collaboration with other CGIAR Centres and international agricultural research institutions, and undesirable overlap of activities.

The Centre's relationships with the government of its host country or countries and with institutions therein.

**H. Achievements and Impact**

The Centre's overall impact, its contribution to the achievement of the mission and goals of the CGIAR, and the methods used for making such assessments.

Recent achievements of the Centre in research and other activities.

The potential of the Centre's current and planned activities for future impact.

**THE REPORT AND RECOMMENDATIONS**

Panels are requested to prepare succinct reports in plain language (understandable to non-technical readers), in which factual material is kept to the minimum necessary to set the conclusions in context. Reports should include clear endorsements of the Centre's activities where appropriate, as well as recommendations and suggestions for changes.

Recommendations should be justified by the analysis and approved by panel members. Recommendations for increases in staff or activities should be accompanied by analyses of their resource implications. Reports should be formally transmitted to the Chairman of TAC and the Executive Secretary of the CGIAR by panel Chairs.

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<sup>1</sup> National research systems include all those institutions in the public and private sectors, including universities, that are potentially capable of contributing to research related to the development of agriculture, forestry and fisheries.

## LIST OF QUESTIONS FOR EXTERNAL REVIEWS

These questions supplement the Terms of Reference and illustrate the types of question the panel should consider in each category. They apply to most, but not necessarily to all CGIAR Centres. In addition, TAC and the CGIAR Secretariat usually compile a short list of questions that are specific to the Centre under review. In preparation for each review, the questions are circulated to the members of the CGIAR and the Centre inviting them to comment and, if considered essential, to add supplementary questions. The panel is not required to answer all questions explicitly, but to take them into account in making its own assessment of the most important ones.

### A. Recent Evolution of the Centre

1. What important changes have taken place in the Centre since the previous external review? What were the principal reasons for change? What are the likely effects of these changes on the future performance of the Centre?
2. How responsive was the Centre to the previous review?

### B. Mandate

3. How appropriate are the Centre's operational mandate and mission statement in relation to the changing mission and goals of the CGIAR?
4. How well do the present and planned activities of the Centre relate to the mandate and the mission of the Centre?

### C. Strategy and Programmes

5. Does the Centre have an up-to-date and well-reasoned strategy statement? In particular, does it:
  - (a) reflect a thorough understanding of the needs of the Centre's principal clients and of the relevant activities of its partners and collaborators?
  - (b) take into account the major changes expected to occur in the Centre's external environment?
  - (c) spell out the Centre's aims and objectives in different programme areas and provide a clear justification for them?
  - (d) take into account the Centre's internal strengths and weaknesses and the financial constraints likely to be faced?
  - (e) provide a clear justification for the future scale of the Centre's operations?
6. Are national authorities satisfied with the Centre's strategy and did they have adequate opportunity to contribute to its formulation?

7. Does the Centre's allocation of resources to its programmes reflect the priorities appropriately? Are the planned directions and priorities within programmes appropriate?
8. Does the Centre's strategy sufficiently take into account the determinants of sustainable production, the alleviation of poverty and preservation of the quality of the environment?
9. Has the Centre analyzed the operational implications of its future strategy and priorities in terms of finance, staff and other aspects?
10. How well is the Centre's current strategy reflected in its programmes and activities?
11. How successful has the Centre been in reaching its major objectives in each major programme area since the previous external review? Have the approaches adopted been the most appropriate for the problems to be solved? What has been the quality of the Centre's work in each programme area?
12. How effectively does the Centre's training programme meet the needs of national research systems?
13. How much attention has the Centre paid to gender considerations in planning and implementing its programme activities? Is this adequate?
14. Does the Centre give appropriate attention to post-harvest technology?
15. Has the Centre made adequate provisions from its core funds for work on genetic resources? How effectively is this work exploited for the benefit of developing countries?

D. Centre Guidance, Values and Culture

16. Is the Centre's legal status appropriate for fulfilling its mission?
17. How effective has the Centre's board been in determining policy and providing oversight? How effective has it been in managing its internal affairs (e.g., planning, internal board structure, member selection and development, managing meetings, etc.)?
18. Are board-management relationships based on openness, respect for each other's roles, and mutual trust? Does the board regularly assess and provide feedback on the performance of the director general on the basis of explicit and objective criteria?
19. How effectively has the Centre been led by the director general and the management team since the previous external review? How well do senior managers work as a team?

20. What principal guiding philosophies appear to shape the action of the board, management and staff? Are they conducive to high performance? (Among others, consider attitudes towards creativity, accountability, efficiency, and organizational change.)
21. What are the main features of the Centre's current organizational culture? Do aspects of this culture serve as barriers to performance? Is the Centre's organizational culture in harmony with its strategy, structure and management practices?

E. Programme Organization and Management

22. Has the Centre developed an organizational structure suited to good programme performance? What coordination mechanisms are in place? Are they effective? Are there alternative structures that could serve the Centre better in the future in the light of the Centre's strategy?
23. How effectively are the Centre's decentralized activities linked with those at the headquarters? Do the staff outside the headquarters have adequate opportunities to contribute to overall planning and decision making?
24. How effective are the Centre's strategic and operational (i.e. medium term and annual) planning processes? How well are they linked to budgeting? Do these processes ensure sufficient consideration of the views of the Centre's clients and other key stakeholders?
25. Does the Centre have an effective planning and management system for projects or activities?
26. How effective are the Centre's programme monitoring and internal review systems and processes? Does the Centre have an effective peer review or a similar quality control process?
27. Do staff work effectively in teams? Do the structure and operating procedures of work-groups facilitate cooperation and teamwork?
28. Do the Centre's programme organization and management processes ensure efficiency and internal accountability? Are they conducive to innovation?

F. Resources and Facilities

29. How effective has the Centre been in organizing, staffing and managing its human, financial, administrative and information resources?

Human Resources

30. Has the Centre been able to attract and retain international and local staff of the highest calibre? Is the turnover rate one that ensures programme continuity as well as healthy infusion of new staff into programmes?



31. Does the Centre have appropriate personnel policies for international and local staff stationed at the headquarters and outside it? Are they seen to be fair and consistent? (Consider policies for staff recruitment, orientation, compensation, performance planning and assessment, career development, tenure, spouse employment, retirement, etc.)
32. Does the Centre actively promote recruitment, retention and career development of women? Are there barriers to women's advancement in the Centre?
33. How successful are managers and supervisors in managing people? In particular, how skillful are they in planning, coordinating and delegating work, communicating effectively, and motivating, developing and rewarding staff?
34. How satisfied are staff at all levels with their jobs? How are morale, trust, communication and teamwork perceived among the staff?

#### Finance

35. How successful has the Centre been in securing funds for its activities? How stable is the Centre's funding? Does the Centre have a fund-raising strategy, and how effectively is fund-raising managed?
36. Does the proportion of the Centre's budget received as restricted funding distort the Centre's strategy and the priorities accorded to its various activities?
37. How effective are the systems and processes used for financial management of headquarters and field operations? (Consider financial planning, analysis, reporting and control, accounting, budgeting, internal and external auditing, and cash and currency management.)
38. How strongly is financial management linked with programme management? How much financial responsibility do the programme staff have?

#### Administration

39. How successful has the Centre been in establishing an administrative infrastructure that meets the needs of staff in an efficient manner?
40. How cost-effective are the systems and policies used for managing the Centre's:
  - property (e.g., maintenance, development, construction, rental);
  - general services (e.g., security, housing and dormitories, food services, transport, travel services);

- procurement operations (e.g., foreign and local purchasing, receiving, stores)?

### Information

41. How successful is the Centre in acquiring, generating and managing the information it needs for decision-making, communication and integration of activities?
42. How effectively are information services and technology managed? (Consider computerization, telecommunications, records management, archives, library, and documentation.)

### G. External Relationships

43. How successful has the Centre been in managing its relations with:
  - clients in developing countries;
  - institutions in the host country of its headquarters and of its substations in other countries;
  - public and private sector institutions in developed and developing countries (including other CGIAR centres);
  - donors, the CGIAR and TAC;
  - the media and the general public?
44. Is the Centre's strategy for collaboration with national research systems appropriate considering the sizes and stages of development of these systems? Are the priorities for collaborative work accorded to individual countries (in particular, the host country) appropriate? Does the Centre actively promote a strategy of collaboration in international research with national systems and regional research organizations?

### H. Achievements and Impact

45. What mechanisms does the Centre have in place to monitor its achievements and impact? Are these adequate?
46. How does the need to demonstrate impact influence the Centre's priorities and strategies? Is there a tendency for long-term consideration to be sacrificed for short-term gains?
47. What have been the most notable achievements of the Centre since the previous external review?
48. What benefits have developing countries derived from the Centre's work since the previous review? What contributions has the Centre made to

strengthening national research systems through training, institution building, collaborative research and technical assistance?

49. What is the Centre's potential for further impact, given its planned activities? Do these justify continued donor support for the Centre? Is there a case for increasing the Centre's funding level? Could funding be reduced without seriously affecting the Centre's potential for further impact?

I. List of Supplementary Questions

1. What steps has IIMI taken in making a transition between a donor-driven project specific approach to a strategic demand-driven programme approach? Have they been effective?
2. How will IIMI assess its achievements and impact?
3. IIMI recently changed its mandate from improving the management of irrigation to improving the performance of irrigated agriculture. What is the specific role of IIMI in conducting research on irrigated agriculture?
4. What is the role of IIMI as contrasted with other agencies dealing with irrigation and related research including IPTRID and IBSRAM? What is the scope for increased collaboration between IIMI and other CGIAR Centres with respect to irrigated agriculture?
5. Bearing in mind the answer to 4, what are IIMI's current links with those carrying out research on: (a) management of catchments and aquifer intake areas that supply water used for irrigation; and (b) the downstream effects of irrigation schemes on water quality? Are they effective?

**LIST OF INSTITUTIONS VISITED AND PERSONS MET OR CONTACTED**

**1. BURKINA FASO (18-19 November 1993)**

Burkina Faso Country Project, Ouagadougou, IIMI

Dr. Hilmy Sally, Project Leader

Burkina Faso Coordinating Committee

Mr. Tassere Congo, Chairman

Mr. Ibrahim Paré, National Project Coordinator

Comite Inter-Africain d'Etudes Hydrauliques (CIEH)

Mr. Amadou Diaw, Secretary General

Mr. Max Raymond, Chief du Service Hydraulique et Agroclimatologie

Institute d'Etudes et des Recherches Agricoles (INERA)

Mr. Celestin Belem, Director

Ministry of Water

Mr. Joseph N. Ouedraogo, Minister

Mr. Tidiani Paré, Secretary General

Office National des Barrages et des Amenagements Hydro-Agricoles (ONBAH)

Mr. Jerome Thiombiano, Director General

**2. COLOMBIA**

Centro Internacional de Agricultura Tropical (CIAT)

Dr. Gustavo A. Nores, Director General

**3. COTE D'IVOIRE**

West African Rice Research and Development Association (WARDA)

Dr. Eugene Terry, Director General

Dr. Tom Randolph, Economist

**4. FRANCE**

Centre National du Machisme Agricole du Genie Rural des Eaux et des Forets  
(CEMAGREF)

Dr. Yves Le Bars, Director General

Centre de Cooperation Internationale en Recherche Agronomique pour le Developement  
(CIRAD)

Dr. Michel de Nuce de Lamothe, Director General

5. **INDIA** (19 November 1993)

Anna University, Centre for Water Resources, Madras, Tamil Nadu  
Dr. N.V. Pundarikanthan, Director

Central Water Commission

Mr. M.S. Reddy, Chairman and Acting Secretary, Ministry of Water Resources  
Mr. R. Rangachari, Former Member  
Mr. A.D. Mohile, Chief Engineer (Irrigation Management)

Indian Council of Agricultural Research (ICAR)

Dr. J.P. Abrol, Deputy Director General (Soils, Agronomy & Agroforestry)  
Dr. T.N. Chaudhry, Assistant Director General (Integrated Water Management)

International Commission on Irrigation and Drainage (ICID)

Dr. M.A. Chitale, Secretary General

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad

Dr. James Ryan, Director General

International Rice Research Institute (IRRI)

Dr. B.P. Ghildyal, IRRI Liaison Scientist

Ministry of Water Resources

Mr. N. Suryanarayanan, Commissioner (Policy & Planning)  
Dr. V.S. Dinkar, Senior Joint Commissioner, Command Area Development  
Mr. R.P. Chauhan, Additional Secretary

Patna University, Centre for Water Studies, Bihar

Dr. T. Prasad, Director

Planning Commission, Government of India

Mr. B.N. Navalawala, Advisor (Irrigation and Command Area Development)  
Mr. S.S. Singh, Joint Advisor (Irrigation and Command Area Development)  
Mr. K.S. Sharma, Consultant

Water and Land Management Institute, Anand, Gujarat

Dr. O.T. Gulati, Joint Director

Water and Land Management Institute, Lucknow, Uttar Pradesh

Prof. K.P. Jain

Water and Land Management Institute, Patna, Bihar

Dr. A.K. Varma, Joint Director

Public Works Department, Tamil Nadu

Dr. V. Arumugaswamy, Addl. Chief Engineer

University of Patna, Centre for Water Resources Studies, Bihar

Dr. T. Prasad, Director



University of Roorkee, Water Resources Development Training Centre  
Professor A.S. Chawla

Water Technology Centre, Indian Agricultural Research Institute (IARI)

Dr. S.K. Sinha, Director

Prof. P.B.S. Sharma

Dr. T.K. Sarkar, Principal Scientist & Project Director

Dr. A.K. Bhattacharya, Principal Scientist & Project Coordinator (Drainage)

**6. INDONESIA (24-26 November 1993)**

Asian Development Bank

Mr. Eiji Kobayashi, Chief, ADB Resident Office

Mr. Wouter Vochteloo, Project Engineer

Bureau of Water Resources and Irrigation, National Planning Agency (BAPPENAS)

Mr. Rizky Ferianto

Mr. Bambang Adinugraha

Mr. Budi Santoso

Centre for Agro-Socio-Economic Research (CASER)

Dr. Effendi Pasandaran, Director

Centre for International Forestry Research (CIFOR)

Dr. Jeffrey Sayer, Director General

Department of Public Works

Ir. Soenarno, Director of Irrigation I Division

Ford Foundation

Dr. Suzanne Siskel, Assistant Representative

University of Gadjah Mada, Yogyakarta

Ir. Suprodjo Pusposutardjo, Dean of Faculty and Head of Department of Engineering

**7. ITALY**

Food and Agriculture Organization of the United Nations (FAO)

Dr. W.G. Sombroek, Director, Land & Water Development Division

International Fund for Agricultural Development (IFAD)

Dr. Abbas Kasseba, Director of Technical Advisory Division

Istituto Agronomico Mediterraneo, Bari

Dr. C. Lacirignola, Director

**8. KENYA**

International Centre for Research in Agroforestry (ICRAF)

Dr. Pedro Sanchez, Director General

**9. MEXICO**

Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT)

Dr. Donald Winkelmann, Director General

**10. NIGER (17-18 November 1993)**

Direction du Genie Rural

Mr. Laouan Saley, Assistant Director

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Sahelian Centre, Niamey

Dr. Charles Renard, Executive Director

National Agricultural Research Institute (INRAN)

Dr. Mamadou Ouattara, Director General

Dr. Abdoulaye Adam, Scientific Director

Niger Country Project, Niamey, IIMI

Mr. Kurt Lonsway, Project Leader

Mr. Idrissa Chipkao, Training

Mr. Soussou Moussa, Field Experiments

Mr. Abdou Moulaye Ahmed, Hydraulics

Mr. Chegou Maman, Production Systems

Mrs. Assahaba, Sociologist

Dr. Guero Yadji, Pedology

Mrs. Schaap Mirjam, Consultant (Gender)

Mrs. Fatima Marsalachi, Consultant (Gender)

Mr. Fati Hainikoye, Assistant Accountant

Office National des Amenagements Hydro-Agricoles (ONAHA)

Mr. Sahadou Bawa, Director General & National Coordinator

University of Niamey

Dr. Abdoulaye Guaro, Dean, Faculty of Agronomy

**11. NIGERIA (15-16 November 1993)**

Hadeija-Jama'are River Basin Development Authority (HJRBDA)

Mr. Salihu Ben-Musa, Managing Director

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Kano

Dr. S. Ajayi, Team Leader, Cereals Improvement

International Institute for Tropical Agriculture (IITA)

Dr. Lukas Brader, Director General

Dr. B.B. Singh, Officer-in-Charge & Cowpea Breeder, Kano

Dr. Stanford Blade, Cowpea Agronomist/Breeder, Kano

Dr. Rerao Tomio, Plant Physiologist, Kano

Kano River Irrigation Project (KRIP)

Mr. Salisu Umar, Head, Irrigation Department  
Mr. H. Zulaires, Head, Water Association Units

Nigeria Country Project, Kano, IIMI

Dr. Prachanda Pradhan, Project Leader  
Mr. Joseph Sunday Omotowoju

Sasakawa Global 2000 Project, Kano

Dr. L. Campbell, Team Leader

**12. PAKISTAN (14-17 November 1993)**

Agriculture Department, Punjab

Dr. Ahmad Gill, Director General (On-Farm Water Management)

IIMI-Pakistan Division

Prof. Gaylord Skogerboe, Director  
Mr. D.J. Bandaragoda, Senior Management Specialist  
Dr. Carlos Garces-Restrepo, Irrigation Engineer  
Dr. Bagh Ali Shahid, Principal Engineer  
Dr. Edward J. Vander Velde, Senior Irrigation Specialist  
Mr. Salim Malik, Senior Field Research Social Scientist

International Water and Salinity Research Institute (IWASRI)

Dr. Zuberi, Director General  
Dr. Nawaz Bhutta, Director

Irrigation and Power Department, Punjab

Dr. Firdousi, Retired Director of Research  
Mr. Abdul Hamid Arif, Retired Chief Engineer

Planning and Development Department, Punjab

Mr. Malik Ahmad Khan, Chief (Water and Power)

Ministry of Water and Power, Government of Pakistan

Mr. Syed Shahid Husain, Additional Secretary  
Mr. Syed Faiz Ahmad Zaidi, Joint Secretary  
Mr. Sikander Beg, Assistant Chief (Development)

Pakistan Agricultural Research Council (PARC)

Dr. Zafar Altaf, Chairman  
Mr. Abdul Qayyum, Technical Staff Officer to Chairman  
Mr. Izhar Qazi, Site Engineer (IIMI building construction)  
Mr. Imran Moazzam, Sub-Engineer

Planning and Development division, Government of Pakistan

Mr. Abdul Hafeez Qaiser, Chief (Water) Planning Division  
Dr. Munnawer H. Shah, Assistant Chief (Water), Planning Div.

Water and Power Development Authority (WAPDA)

Mr. Shamsul Mulk, Member and Managing Director (Water)

**13. PHILIPPINES (29-30 November 1993)**

Agriculture Department

Dr. Manuel Lantin, Under Secretary

Asian Development Bank, Agriculture Department

Mr. Richard Bradley, Director

Mr. Nihal Amarasinghe, Manager, Agriculture Division 1

Mr. T.C. Patterson, Manager, Agriculture Division 5

International Centre for Living Aquatic Resources (ICLARM)

Dr. Laurence Stifel, Director General

International Rice Research Institute (IRRI)

Dr. F.A. Bernardo, Deputy Director General

Dr. H.U. Neue, Head, Soil & Water Sciences Division

Dr. S.I. Bhuiyan, Agricultural Engineer, S & WSD

Dr. T.P. Troung, Water Management Engineer, S & WSD

National Economic Authority

Dr. Ernesto Bautista, Director General

Dr. Marietta Adriano, Deputy Director, Agriculture Bureau

National Irrigation Administration

Mr. Apolonio Bautista, Administrator

Mr. Jorge Obordo, Assistant Administrator

Philippine Council for Agriculture, Forestry and Natural Resources and Development (PCARRD)

Dr. Cledualdo Perez, Executive Director

**14. SRI LANKA (11-14 November 1993)**

Agrarian Research and Training Institute

Mr. G. D. P. Seneviratne, Director

IIMI-Sri Lanka Field Operations

Dr. C. M. Wijayarathna, Head

Dr. R. Sakthivadivel, Senior Irrigation Specialist

Dr. Azharul Haq, Irrigation Specialist

Dr. Jeff Brewer, Social Scientist

Dr. C. R. Panabokke, Senior Associate

Irrigation Department

Mr. K. Yoganathan, Director of Irrigation

Mr. L.T. Wijesuriya, Senior Deputy Director (Rehabilitation)

Mr. S.A.P. Samarasinghe, Deputy Director (Regional Works Division)

Mr. H.A. Karunasera, Chief Resident Engineer, Kirindi Oya

Mr. K.S.R. de Silva, Project Director, NIRP

Irrigation Management Research Unit (IMRU)

Mr. B.M.S. Samaraseka, Deputy Director

Mahaweli Economic Agency

Mr. Godfrey de Silva, Managing Director

Ministry of Forestry, Irrigation and Mahaweli Development

Mr. D.G. Premachandra, Secretary

Sri Lanka Irrigation Training Institute (SLITI), Galgamuwa

Mr. H.M. Jayatillake, Deputy Director

**15. SYRIA**

International Centre for Agricultural Research in the Dry Areas (ICARDA)

Dr. Nasrat Fadda, Director General

**16. THAILAND**

International Board for Soils Research and Management (IBSRAM)

Dr. Mark Latham, Director

**17. THE NETHERLANDS (14 November 1993 & 8 February 1994)**

IIMI-West Africa

Ir. Ernst Schulze, Acting West Africa Regional Representative

International Service for National Agricultural Research (ISNAR)

Dr. Christian Bonte-Freidheim, Director General

Dr. Howard Elliot, Deputy Director General

Dr. Barry Nestle

Dr. Pablo Eyzaguirre

Dr. Byron Mook

Dr. Zenete Franca

Dr. Robert Ellinger

Dr. Adjibola Taylor

Dr. Paul Perrault

Dr. Douglas Horton

Dr. Matthew Dagg

International Institute for Land Reclamation and Improvement (ILRI)

Ir. M.J.H.P. Pinkers, Director

The Winand Staring Centre, Wageningen

Ir. G.A. Oosterbaan, Director

**18. UNITED KINGDOM**

Alexander Gibbs & Partners, Reading

Mr. John Hennessey, Partner, and President, ICID, and Observer on IIMI Board

Mr. R. Rangle, Partner, and Member of IIMI Board

CAB International

Dr. Douglas Laing, Director General

Dr. Dennis Greenland, Consultant



Hydraulics Research Ltd., Wallingford

Dr. T.J. Weare, Managing Director

Dr. Sanmuganathan, Head, Overseas Development Unit

Natural Resources Institute

Dr. Anthony Beattie, Director

Dr. R.D. Cook, Deputy Director

Overseas Development Administration, London

Dr. J.C. Davies, Natural Resources Adviser

Overseas Development Institute, London

Dr. Linden Vincent, Coordinator, Irrigation Management Network

University of London, Wye College

Dr. Ian Carruthers, Professor of Agrarian Development

University of Reading

Dr. Hugh Bunting, Emeritus Professor of Agricultural Development Overseas

**19. USA (26-29 October 1993)**

World Bank, Agriculture and Rural Development Division

Mr. Michel Petit, Director

Mr. Guy Le Moigne, Senior Adviser, Water Resources

International Programme for Technology Research in Irrigation and Drainage (IPTRID)

Dr. Ashok Subramanian, Executive Secretary

Dr. Bert Smedema, Theme Leader, Drainage

Committee on Agricultural Sustainability for Developing Countries

Mr. Robert O. Blake, Chairman

Ms. Kristin Schafer, Programme Assistant

International Food Policy Research Institute (IFPRI)

Dr. Per Pinstrup-Andersen, Director General

Dr. Peter Hazell, Director, Environment and Production Technology Division

Dr. Mark W. Rosegrant, Research Fellow

## SURVEY ON IIMI PROGRAMMES AND PERFORMANCE

### **1 Approach**

In October 1993, on behalf of the First IIMI External Programme and Management Review Panel, the Executive Secretary of TAC distributed a questionnaire to 330 individuals in various institutions in Asia, West Asia and North Africa, sub-Saharan Africa and Latin America, who had some professional links with irrigation management research. The basis for selection of participants was the mailing list provided by IIMI.

The objective of the survey was to elicit respondents' opinions on (a) the importance to them of various programmes and activities of IIMI over the past five years (i.e., 1989-93), and (b) the expected importance of IIMI's work during the next decade (i.e., 1994-2003).

The respondents were asked to evaluate each area of IIMI's work in terms of a ranking using the following scale: 0, not known; 1, not valuable; slightly valuable; 3, moderately valuable; 4, very valuable; 5, extremely valuable.

Each programme areas was evaluated in term of research, strengthening of research capacity, strengthening of management capacity, and information dissemination activities. For the evaluation of IIMI's programmes during the next 10 years, the programme areas were subdivided according to activities within those areas. The respondents were also asked to evaluate the effectiveness of collaborative mechanisms, particularly networks and country projects, and soundness of IIMI's strategy and priorities. Finally, the respondents were requested to assess the level of their satisfaction with IIMI's interaction with their organizations during its strategic and medium-term planning exercises.

In addition to the above numerical evaluation, respondents were also requested to comment on: the recent change in IIMI's mission statement, IIMI's major strengths and weaknesses; and IIMI's major contributions.

### **2 Results**

Although responses were anonymous, the respondents were asked to indicate their current position, type of institution, gender, and relationship to IIMI. Of the 47 responses received (representing 14% return), 28 were from Asia. Of the total, six were research scientists, 9 were research administrators, 6 were irrigation managers, 10 were policy makers, and 16 were not in any of these categories. Five respondents were female. Twenty two respondents reported more than three years association with IIMI, while 25 reported less than three years of association.

Response by programme area for each activity type (i.e., research, strengthening research capacity, strengthening management capacity, and information dissemination) for the past five years are summarized in Table 1, and for the next ten years in Table 2. Responses regarding the effectiveness of IIMI's collaboration, and IIMI's strategic and medium-term plans are presented in Table 3.

## 2.1 Numerical Evaluation

The score achieved for all IIMI's activities combined for the past five years (1989-93) was 3.0 (moderately valuable) (Table 1). Research, strengthening research capacity, strengthening management capacity, and information activities were considered more or less of equal value with mean overall scores of 3.0, 2.7, 3.2, and 3.0 respectively. In terms of specific programmes, activities related to management of water resources for irrigation, and to institutions for irrigation management were considered most valuable (mean overall scores of 3.2 and 3.1 respectively), and those related to management of financial resources for systems sustainability (2.6) the least valuable. Relatively higher value was given to research activities related to management of water resources for irrigation (mean score 3.2), management of irrigation facilities (3.0) and management of irrigation organizations (3.0). The lowest values were attached to research activities related to management of financial resources for system sustainability, and to management of irrigation support service to farmers (both 2.5 mean score).

Overall, researchers placed relatively less value than managers and policy makers on IIMI's activities (2.5 vs 3.1). However, researchers placed a particularly low value to activities related to management of financial resources for systems sustainability than managers and policy makers (1.5 vs 3.0).

The importance given to all IIMI's future (1994-2003) activities combined was higher than the value during the past five years (overall mean scores of 3.8 vs 3.1)(Tables 1 and 2). All individual future research activities were valued higher than the value during the past five years: research, mean score 3.8 vs 3.0; strengthening research capacity, 3.5 vs 2.7; strengthening management capacity, 3.9 vs 3.2; information dissemination, 3.8 vs 3.2. At the programme level, the greatest future importance was placed on the activities related to assessing and improving the performance of irrigated agriculture and to sustainable management of water delivery and disposal (both 4.1 overall mean score). At the programme activity level, the highest importance was given to activities related to water conservation through management improvements and to environmental sustainability and public health (both 4.2 mean overall score). All other programme activities received a score between 3.4 and less than 4.0 (moderately valuable to very valuable).

Respondents rated the value of networks to be close to very valuable (3.9)(Table 3), with the researchers placing a higher value to networks (4.4) than managers and policy-makers (3.8). Similarly, respondents from Asia placed a higher value (4.3) than respondents from outside Asia (3.6) to the value of networks. The different activities of country projects were rated about same in importance (3.5 to 3.8). There was better than moderate agreement (3.3) with the statement "that IIMI had a sound long-term strategy and clearly defined priorities". The respondents were moderately satisfied (3.1) with IIMI's interactions during its last strategic and medium-term planning exercises.

## 2.2 Respondent's Comments

Respondent's comments provide further supplementary insights to some of the trends summarized above. Three-quarters of the respondents considered that the recent change in mission from "irrigation systems" to "irrigated agriculture" was appropriate. Some felt the change to be forward-looking, in line with the needs of a changing world, and allowed better integration between management and production.

Responses to the question whether "IIMI has a sound long-term strategy and clearly defined priorities" were mixed, and so were the responses to the question regarding how satisfactory were "IIMI's interactions during the strategic and medium-term planning exercise".

Most respondents considered IIMI to have a variety of strengths including: being an international organization that is dedicated to irrigation management research and related activities; having experienced and good quality international staff; the possibility of conducting research of transnational value and its potential for international impact; physical country-level presence; and networking. Weaknesses included: its relatively small size; limited budget and operational base; lack of sustained country presence; slow in generating impact; and information dissemination and communications.

The following is a selection of comments to indicate how the respondents view IIMI's major contributions to their countries, and to note some interesting individual comments.

- o "Getting Irrigation Department to develop a "culture" for research in irrigation management" (South Asia).
- o "IIMI has made a fair contribution in promoting participatory management of irrigation systems and to a limited scale the improving of water use technology and productivity" (South Asia).
- o "Right now there is a growing awareness that irrigation performance can be improved" (sub-Saharan Africa).
- o "IIMI has played a major role in pointing out major weaknesses in existing management of irrigation system in the country. It has focused on O & M issues, water conservation/use, irrigation system's reliability and equity in water distribution, cropping pattern and to some extent on institutional issues" (South Asia).
- o "Awareness, realization and need for improved management of irrigation systems, training and dissemination of knowledge" (Asia).
- o "Has stimulated thinking on the problems of irrigated agriculture" (sub-Saharan Africa).
- o "Research on use of diversification, and creation of the national committee on crop diversification" (Southeast Asia).
- o "Research findings on the farm level and farmers organizations" (West Asia).
- o "Establishing relations with the organizations working in irrigated agriculture; and identifying some of the major problems facing irrigation management with special attention to two of our big schemes" (sub-Saharan Africa).

- o "Conducting training needs exercises, workshops, training of trainers, developing curriculum and launching training programmes on irrigation systems management. Conducting workshops and round table discussions on strategic research on irrigation systems management (Southeast Asia).
- o "An international seminar on measurement of performance of irrigation systems administered by farmers" (South America).



Table 1. Evaluations of IIMI's Past Programme Themes, 1989 - 1993

Programme Themes	Research	Strengthening Research Capacity	Strengthening Management Capacity	Information Dissemination	Overall Mean
1. Institutions for Irrigation Management	2.9 (0.22)	2.7 (0.23)	3.3 (0.22)	3.4 (0.16)	3.1 (0.16)
2. Management of Water Resources for Irrigation	3.2 (0.20)	3.2 (0.22)	3.2 (0.23)	3.3 (0.19)	3.2 (0.18)
3. Management of Financial Resources for Systems Sustainability	2.5 (0.26)	2.5 (0.31)	2.7 (0.30)	2.4 (0.24)	2.6 (0.27)
4. Management of Irrigation Facilities	3.0 (0.24)	2.7 (0.24)	3.0 (0.24)	2.9 (0.23)	3.0 (0.20)
5. Management of Irrigation Organization	3.0 (0.21)	2.8 (0.23)	3.2 (0.23)	3.0 (0.21)	3.0 (0.18)
6. Management of Irrigation Support Services to Farmers	2.5 (0.23)	2.4 (0.23)	3.1 (0.25)	3.1 (0.24)	2.9 (0.21)
7. Management of Change in the Institutions for Irrigation	2.6 (0.24)	2.6 (0.25)	2.9 (0.27)	3.0 (0.22)	2.9 (0.20)
Overall Mean	3.0 (0.16)	2.7 (0.17)	3.2 (0.17)	3.0 (0.15)	3.00 (0.14)

Scale: 1 - not valuable; 2 - slightly valuable; 3 - moderately valuable; 4 - very valuable; 5 - extremely valuable

Note: Values in table are mean scores over all respondents, with the standard error of the mean in ( ).

**Table 2. Evaluation of IIMI's Future Activities, 1994-2003**

Programme Area (Next 10 Years, 1994-2004)	Research	Strengthening Research Capacity	Strengthening Management Capacity	Information Dissemination	Overall Mean
1. Assessing and Improving the Performance of Irrigated Agriculture	4.1 (0.16)	3.8 (0.20)	4.1 (0.14)	4.1 (0.12)	4.1 (0.12)
1.1 Determinants of Performance	3.7 (0.18)	3.6 (0.22)	3.9 (0.16)	3.8 (0.17)	3.7 (0.15)
1.2 Socioeconomic Impact	3.8 (0.17)	3.6 (0.21)	3.9 (0.14)	3.9 (0.13)	3.8 (0.12)
2. Sector-Level Management of Irrigation Agriculture	3.5 (0.20)	3.4 (0.19)	3.7 (0.19)	3.8 (0.20)	3.6 (0.17)
2.1 Process and Tools for Policy Formulation	3.3 (0.21)	3.1 (0.19)	3.6 (0.18)	3.4 (0.22)	3.4 (0.16)
2.2 Process and Tools for National Strategic Planning	3.3 (0.20)	3.2 (0.21)	3.6 (0.21)	3.4 (0.23)	3.3 (0.18)
3. Improving Public Irrigation Organizations	3.7 (0.21)	3.6 (0.21)	4.0 (0.19)	3.9 (0.21)	3.9 (0.17)
3.1 Organizational Design	3.2 (0.21)	3.1 (0.23)	3.7 (0.23)	3.9 (0.18)	3.5 (0.18)
3.2 Organizational Reform	3.4 (0.22)	3.3 (0.23)	3.9 (0.22)	3.7 (0.23)	3.7 (0.19)
4. Towards Local Management of Irrigation Systems	3.7 (0.22)	3.5 (0.25)	4.0 (0.19)	4.0 (0.19)	3.8 (0.17)
4.1 Analysis of Local Organizations for Effectiveness	3.7 (0.20)	3.4 (0.21)	3.9 (0.17)	4.0 (0.17)	3.8 (0.15)
4.2 Framework for the Transfer of Irrigation Management	3.6 (0.19)	3.5 (0.19)	3.9 (0.18)	4.0 (0.17)	3.8 (0.14)
4.3 Impact of Management Transfer on Irrigation Performance	3.7 (0.19)	3.5 (0.19)	3.8 (0.19)	3.8 (0.19)	3.7 (0.16)
4.4 Financial Sustainability of Local and Joint Managed Irrigation Systems	3.4 (0.25)	3.1 (0.22)	3.6 (0.19)	3.6 (0.21)	3.5 (0.17)
4.5 Institutional and Managerial Options for Groundwater Irrigation Systems	3.7 (0.20)	3.5 (0.22)	3.8 (0.18)	3.8 (0.20)	3.7 (0.16)
5. Sustainable Management of Water Delivery and Disposal	4.1 (0.16)	4.0 (0.17)	4.3 (0.15)	4.2 (0.17)	4.1 (0.14)
5.1 Water Conservation through Management Improvements	4.1 (0.13)	4.0 (0.14)	4.1 (0.13)	4.2 (0.13)	4.2 (0.10)
5.2 Conjunctive Use Management	3.9 (0.15)	3.9 (0.17)	3.9 (0.15)	4.0 (0.17)	3.9 (0.13)
5.3 Environmental Sustainability and Public Health	4.0 (0.16)	4.1 (0.16)	4.1 (0.17)	4.2 (0.17)	4.1 (0.14)
Overall Mean	3.7 (0.13)	3.5 (0.14)	3.8 (0.13)	3.8 (0.13)	3.8 (0.11)

Scale: 1 - not important; 2 - slightly important; 3 - moderately important;  
4 - very important; 5 - extremely important.

Note: Values in Table are mean scores over all respondents, with the standard error of the mean in ().

**Table 3. Evaluation of Effectiveness of Collaboration, Agreement with IIMI's changed Mission Statement, and Extent of Interactions with National Collaborators**

	mean	se	Scales
1. <b>NETWORKS</b>	3.9	0.17	1 = not valuable 2 = slightly valuable 3 = moderately valuable 4 = very valuable 5 = extremely valuable
2. <b>COUNTRY PROJECTS</b>	3.6	0.14	1 = not valuable 2 = slightly valuable 3 = moderately valuable 4 = very valuable 5 = extremely valuable
2.1 Strengthening Research Capacity	3.7	0.17	
2.2 Strengthening Management Capacity			
(a) Organizational Development	3.6	0.19	
(b) Professional Development	3.8	0.16	
2.3 Information Dissemination	3.6	0.20	
2.4 Strategies and Long Term Planning	3.5	0.20	
3. <b>IIMI'S MISSION STATEMENT</b>	3.3	0.15	1 = do not agree 2 = slightly agree 3 = moderately agree 4 = mostly agree 5 = completely agree
4. <b>IIMI'S INTERACTIONS WITH RESPONDENTS' ORGANIZATIONS DURING THE LAST MTP PLANNING EXERCISE</b>	3.1	0.18	1 = not satisfactory 2 = slightly satisfactory 3 = moderately satisfactory 4 = very satisfactory 5 = extremely satisfactory

**DOCUMENTS PROVIDED TO THE REVIEW PANEL**

**A. Documents Provided by the TAC and CGIAR Secretariats**

1. Review Processes in the CGIAR, 1988
2. Terms of Reference and Guidelines for External Reviews of CGIAR Centres
3. Report of the First External Programme and Management Review of the International Centre for Research in Agroforestry (ICRAF)
4. Extracts from reports of TAC 54 (March 1991) and TAC 59 (October 1992) regarding discussions on IIMI
5. Sustainable Agricultural Production: Implications for International Agricultural Research, 1989
6. Expansion of the CGIAR System, 1992
7. A Review of CGIAR Priorities and Strategies: Parts I and II, 1992
8. Overview of Management in the CGIAR Centres, 1990
9. CGIAR - The Boards of Trustees of the International Agricultural Research Centres
10. Some Thoughts Towards Ensuring the Successful Performance of Boards in the CGIAR System, 1987

**B. Standard Documents Provided by IIMI at the Request of the TAC and CGIAR Secretariats**

11. IIMI 1992 Annual Report
12. IIMI's Strategy for the 1990s
13. Medium-Term Plan 1994-1998
14. 1993 Programme & Budget
15. The Organizational Structure
16. List of Agreements with other Centres and Institutions
17. Approved Restricted Projects 1989-1993
18. Achievements and Impacts 1984-1993
19. Progress Report on Measures Taken to Address the Recommendations and Suggestions of IIMI's 1989/90 External Review Panel

20. External Programme and Management Review of IIMI
21. List of International Staff with Summary of Qualifications and List of National Professional and Management Staff in Sri Lanka with Summary of Qualifications
22. Staffing Pattern by Category, Programme, Location, indicating male'female ratio - 1993 and IIMI's National Staff based in Sri Lanka as of 1 October 1993
23. IIMI's Publications June 1984 - October 1993
24. Reports of major planning conferences, internal reviews, expert meetings etc, which have had a major influence on the direction of the specific programmes of the Centre:
  - Review and Analysis of the Research Programme of IIMI by Gil Levine
  - IIMI Strategy Review for Sub-Saharan Africa by F. E. Schulze
  - Review of IIMI's Experience in Strengthening National Capacity for Irrigation Management and Research by P. S. Rao and Nanda Abeywickrema
  - Managing Irrigation Systems to Minimize Water-logging and Salinity Problems (Evaluation Mission Report)
  - The Farmer Managed Irrigation Systems Network, Advisory Committee: Minutes of Meetings of the FMIS Advisory Committee
  - Irrigation Systems Management Project, Mid-Term Evaluation Report
25. The Charter and Founding Documents - Revised November 1993
26. Brief Description of the Evolution of IIMI's Mandate since its establishment
27. Composition of Governing Board and Committee Memberships 1989-1993
28. The Board Handbook
29. Minutes of Programme Committee Meetings 1984-1993  
Minutes of Executive and Finance Committee Meetings 1984-1993  
Minutes of the Board of Governors Meetings 1983-1992  
Minutes of Nominating Committee Meetings 1984-1992
30. Description of IIMI's Internal Management Structure
31. Minutes of Management Committee Meetings 1988-1993
32. International Staff Terms and Conditions of Employment and Policies for Nationally Recruited Staff
33. Table showing Allowances, Benefits, and Salary Ranges for each Category of Staff (to management specialists only)
34. Local Compensation Surveys used by the Centre
35. Table showing Personal Data in Internationally Recruited Staff by Programme, including each Job Title, Incumbent's Location, Tenure, Gender, Nationality, Age, Salary over the last three years, and Source of Funding (names excluded) (to mgt. specialists only)
36. Summary of International Staff Turnover - 1989-1993 by Category (to management specialists only)
37. Status of International Recruitment from 1990 (to management specialists only)



38. Reports of External Auditors to the Board 1984-1992 (one set)
39. Internal Audit Report 1993 (one set)
40. Internal Management Reports or Reports Written by Consultants on Aspects of the Centre's Management that are of a Non-Confidential Nature (to management specialists only)
41. Description of IIMI's Information Systems (to management specialists only)
  - IIMI Policy on Publications
  - IIMI Field Office Library Holdings
  - IIMI's Information Systems
  - Assessment of IIMI Information Systems - 1993
42. Summary Information on Administrative and Finance Units (to management specialists only)

**C. Additional Documents Provided by IIMI During and After the Initial Phase**

43. DG's Personal Vision of IIMI
44. Development and Prioritizing of Research Programme
45. A full Organogram for the Institute
46. Control and Decision-Making on Funding for Research
47. Critical Mass in Field Programmes
48. Quality Management
49. Agenda 21: Implications for IIMI
50. Demand and Supply of Foodstuffs up to 2050 with Special Reference to Irrigation by Monty Yudelman
51. Programme Schedule of the 1993 Internal Programme Review
52. IIMI's Publications - January 1985 to January 1994
53. Funding for Research and Development - Control and Decision
54. Chapter 3 - Research Activities
55. 1993 Board Document - Proposed 1994 Budget
56. 1993 Board Document: Revisions to IIMI's Medium-Term Plan
57. Memo from DG to all IIMI Staff - Personnel Decisions to Address Financial Challenges
58. IIMI's Key Achievements 1984 - 1993
59. Current Research Projects
60. Updates since Initial Phase

61. 9th Internal Programme Review - Review of Units' Activities - Volume II
62. 1993 Programme Committee Document - Proposed 1994 Programmes
63. Operating Information on Staffing and Expenditures
64. Impact of IIMI Research, Re: Impacts & Achievements Paper
65. Transcriptions of Charts from Meetings with O'Hare Associates
66. Sample Progress Reports on Projects:
  - (a) - Seasonal Report - Uda Walawe Project Yala 1992
  - (b) - IIMI Burkina Faso Progress Report
  - (c) - ISM Project Sri Lanka
67. Programme Planning Meeting Documents
68. Review and Forward Planning of IIMI's Programmes
69. Extracts from Minutes of
  - December 93 Board Meeting
  - December 91 Programme Committee Meeting
  - April 91 Board Meeting
  - December 90 Board Meeting
70. Memo dated 17 November 1990 from David Bell to Members of the Board
71. Brief Report on Discussion of IIMI's Strategy at 54th Meeting of TAC
72. Preliminary Notes for a Review and Revision of the IIMI Strategy Paper
- D. Documentation Given to the External Review Panel for Field Visits**

Sri Lanka:

73. Review of 1992 IIMI Programme in Sri Lanka - C. M. Wijayaratna
74. Review of IIMI Programme in Sri Lanka - 1993
75. IIMI-Sri Lanka Programme's Experience on Strengthening National Capacity
76. Study of Sri Lankan Responses on IIMI's Contribution to Strengthen National Research and Management Capacity - Neil Fernando
77. Sri Lanka Country Programme - Draft Strategy/Medium Term Plan (1994-2000)

Pakistan:

78. Field Visit Notes #1 - Lower Chenab Canal System
79. Field Visit Notes #2 - Upper Gugera Division
80. Field Visit Notes #3 - Mananwala Distributory
81. Field Visit Notes #4 - Public tubewells

82. IIMI Pakistan Medium Term Plan - 1994-1998 (as revised at the Ninth Meeting of the Consultative Committee of IIMI Pakistan) - 27 October 1993
83. Maps on Pakistan Irrigation Systems and IIMI Pakistan Field Stations Location

India:

84. Review of IIMI-India Programme 1992 - R. Sakthivadivel
85. A Note on IIMI's Future Programme in India
86. Progress Report of the India Programme of IIMI October 1990-March 1993 under the Ford Foundation Grant No. 870.0879 (Narrative Report)
87. IIMI-India Programme: Experience in Strengthening National Capacity
88. A Proposal for an Enhanced Collaborative Programme in India (Paper to be submitted at the 19th Programme Committee Meeting)

Philippines:

89. Philippines Country Programme - C. M. Wijayaratna
90. IIMI and the Philippines - Background Note: Past, Current and Future Programme
91. IIMI-Philippines Programme's Experience in Strengthening National Capacity

Indonesia:

92. IIMI's Experience in Indonesia in Strengthening National Capacity

West Africa:

93. IIMI's Strategy for Sub-Saharan Africa (Paper to be submitted at the 19th Programme Committee Meeting)
94. Current Activities and Future Plans of IIMI for Assisting National Efforts to Improve Irrigation Management in Africa - a Report submitted to the African Development Bank (February 1993)
95. IIMI Strategy Review for Sub-Saharan Africa - Consultant Report prepared by F. E. Schulze (October 1993)
96. An Africa Strategy for IIMI - C. L. Abernethy/D. Berthery

Nigeria:

97. IIMI-Nigeria Country Programme Review 1991 - Prachanda Pradhan
98. IIMI-Nigeria Programme's Experience in Strengthening National Capacity - Prachanda Pradhan
99. A Paper on IIMI-Nigeria Programme
100. Report of a Mission to Nigeria to develop a Medium Term Plan for collaboration between IIMI and Nigerian Organizations (May 1992)

Niger:

101. IIMI-West Africa Region: Niger Country Programme - Identifying Strategies to Reduce Operation Costs, Diversify Crops and Improve Irrigation Management along the Niger River - Kurt A. Lonsway
102. Composite Review of IIMI-Niger Activities - Kurt A. Lonsway (26 October 1993)
103. Strengthening National Capacity in Niger
104. Project Management De L'irrigation Au Niger (IIMI-PMI-Niger)  
Rapport d'Activites Trimestriel

Burkina Faso:

105. Review of IIMI-Burkina Faso Programme 1992 - Hilmy Sally
106. Mogtedo: The Sociotechnical Evolution of an Over-expanding Irrigation Scheme - Hilmy Sally
107. IIMI's Experience in Burkina Faso in Strengthening National Capacity
108. Projet D'Appui Institutionnel An Ministere De l'eau Pour La recherche  
Developpement en Management De l'irrigation Au Burkina Faso.  
Rapport De La Mission D'Evaluation  
A Mi-Par cours (September 1993)

**ASSESSMENT OF IIMI'S PROGRESS IN IMPLEMENTING THE  
RECOMMENDATIONS OF THE  
1990 DONOR SPONSORED REVIEW**

The 1990 Donor-Sponsored Review made five programme-related recommendations, and six management-related recommendations. IIMI's response to the 1990 Review has been taken into account in appropriate sections of this report. The panel's Assessment of the Institute's response is summarized in this Appendix in two parts. I - Programme recommendations, II - Management recommendations.

Of the 11 recommendations, IIMI has implemented 5 recommendations in full, and 6 recommendations partially.



## 1. PROGRAMME RECOMMENDATIONS

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>1. Gender Issues in Irrigated Agriculture</b></p> <p>The Panel recommends <i>"that IIMI consider the implications of the role of women in the agriculture of developing countries in the formulation and conduct of its programmes"</i>. (Page 48 of External Panel Review Report)</p>	<p>The preliminary review decided upon by the Board has been undertaken by a Consultant, Dr. Barbara Lynch, and a report entitled "Gender, Irrigation and IIMI: Issues, Methods and Elements of a Programme" has been completed and published in draft form. The report reviews some of the conceptual issues on gender studies and identifies elements of a programme for IIMI.</p> <p>In 1992, IIMI began implementing a women and irrigation programme, for which IIMI has obtained an Associate Expert from the Netherlands. The Dutch Associate Expert has written a discussion paper on "Gender Issues/Water Issues: A Gender Perspective on Irrigation Management". The report is based on analysis of existing literature and other reports. The Associate Expert has initiated field work in Sri Lanka, Niger and Nepal that will lead to a comparative analysis of gender issues in different irrigation environments.</p> <p>IIMI's Gender Programme has been included in its Medium Term Plan as a cross-cutting topic. Restricted core support for the Gender Programme has been received from the Governments of the Netherlands and Denmark.</p>	<p>A start has been made, but the gender activities have not been integrated into other programme activities and adequately supported and supervised.</p>	<p>1-</p>

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>2. IIMI's Themes</b></p> <p>The panel recommends <i>"that IIMI narrow somewhat the focus of its primary programme efforts, concentrating on those themes and related activities that can make the greatest contribution to the achievement of its mission".</i> (Page 50)</p>	<p>Since the Panel Recommendation was received, IIMI has made substantial progress in concentrating effort upon identified priority problems.</p> <p>In IIMI's new Strategy and its Medium Term Plan for 1994/1998, the Institute's research was narrowed further into five programmes: Assessing and Improving the Performance of Irrigated Agriculture, Sector Level Management of Irrigated Agriculture, Improving Public Irrigation Organizations, Local Management of Irrigation Systems and Sustainable Management of Water Delivery and Disposal.</p>	<p>Not yet "substantial progress". There is insufficient prioritization within programmes.</p>	<p>1</p>
<p><b>3. Over-extension of IIMI's activities</b></p> <p>The External Review Panel recommends <i>"that IIMI give priority to achieving the highest possible quality of effort in whatever it undertakes and not to jeopardize its ability to do so by over-extending itself either geographically or in the size of its total enterprise".</i> (Page 53)</p>	<p>Since the Panel's recommendation, IIMI has made efforts to consolidate its activities and not over-extend itself, either geographically or in total. The senior internationally recruited staff numbers for January 1990 suggest that IIMI's programme has grown at a manageable rate and is now more concentrated than it was in 1990. Further work to fully address the quality objective inherent in the Panel's recommendation is underway and reported separately.</p> <p>Continuing discussions on critical mass have led to an understanding that further concentration of country programmes may be needed.</p>	<p>Reduction in spread of effort have been forced by budget contractions, not resulting from analysis. IIMI is still dispersed and is not sufficiently clear of its research and other targets. This makes it difficult for IIMI to reach quality performance.</p>	<p>1</p>

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>4. Quality Control</b></p> <p>The Panel has recommended <i>"that IIMI institute additional measures to strengthen its quality control mechanisms such as organizing expert reviews of major issues encountered at various stages of a research project as well as special panel reviews of proposed management innovations, to ensure their feasibility, cost effectiveness and adaptability in the given management environment. The costs of such reviews should be a part of the research project budgets"</i>. (Page 62)</p>	<p>Management remains fully committed to strengthening quality control procedures. Existing and new instruments for achieving and sustaining quality have been identified. New instruments, which include the Programme and Projects Sub- Committee, and with it, the introduction of more rigorous planning, monitoring and review processes for all on-going projects and programmes, have been implemented. A paper giving full details of IIMI's quality control measures presented to the Board of Governors at its December 1993 meeting.</p>	<p>Attempts are underway, but remain vague. There is a need for clear goals, and procedures for measuring impact and performance. The procedures put in place are still on paper only, and they have come very late, three years after they were called for. Further, the Internal Programme Review process of IIMI has deficiencies.</p>	1
<p><b>5. Effective communications with personnel in collaborative agencies and those involved in policy making</b></p> <p>The External Panel recommends <i>"that IIMI concentrate on developing effective communications with personnel in collaborative agencies including those at the highest levels involved with policy making"</i>. (Page 48)</p>	<p>IIMI has accorded priority to institutionalizing the forum of the Consultative Committee as a mechanism for promoting communications with key policy makers and senior agency staff. It has been found to be effective in encouraging dialogue and access, and is now incorporated as part of the Memoranda of Agreements that IIMI normally uses as the instruments of entry for collaborative work. (In addition, Study Advisory/Research/Project Coordinating Committees, set up for implementing collaborative projects, help develop linkages with agency staff at all levels). IIMI has also accorded priority to regular visits and meetings with key officials of collaborating countries by IIMI's senior staff, to assist further consolidation of linkages.</p> <p>Seminars and workshops by IIMI have facilitated interchange of ideas on topical irrigation management issues at national and international level. For example, regional workshops for senior policy makers from South-East Asia have been held since 1990. Similar national-level workshops have been held in Sudan (1991), in India (1992) and in Burkina Faso (1993). Such workshops are expected to be a regular feature of IIMI's future programmes, helping to promote regional and international information exchange and an understanding of IIMI's work.</p>	<p>A lot of emphasis is given in the different country programmes to meet the objective of "developing effective communications". This can be further developed but IIMI should not overshoot its capacity. Communications should be functional, feasible and in line with IIMI's research agenda. The Consultative Committee mechanism in place, has good membership, although it is often used more to obtain financial support - than to have intellectual and policy engagement. Sri Lanka Consultative Committee is the most effective but Pakistan with its new Director could also become very effective.</p>	2

## II. MANAGEMENT RECOMMENDATIONS

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>6. Pakistan</b></p> <p>The Panel recommends <i>"that the Institute, possibly the Director General and the Chairman of the Board of Governors, initiate discussions with appropriate officials in Pakistan in an effort to work out an arrangement that would bring IIMI into closer working relationships with irrigation officials and resolve the ambiguity, if any, with respect to the 'autonomy' language in the agreement".</i> (Page 15)</p>	<p>The Director General visited Pakistan twice in the months following the External Review Panel's recommendations. During these visits the Director General discussed the matters raised by the Panel with several officials in Pakistan, including the Minister of Water and Power, the Secretary of Water and Power, and the Secretary (ARD) and Chairman, PARC. All parties agreed that the existing formal arrangements (including Board membership and Consultative Committee Chairmen mechanisms) should be maintained as they are, on the grounds that seeking such changes might damage, rather than strengthen, relations with all relevant parties. However, closer links with the governmental irrigation agencies at both the provincial and federal levels should be sought within these arrangements.</p> <p>Since the Panel's report, IIMI's relations with governmental irrigation agencies in Pakistan have improved. Relations at the federal level have been facilitated by the fact that IIMI's Deputy Director General, Mr. Khalid Mohtadullah, is an official of the Water and Power Development Agency, and one who enjoys the confidence of all the senior officials of the irrigation agencies in Pakistan at both the provincial and federal levels.</p>	<p>"Autonomy" is no longer an issue. Working relations are said to be good by key Pakistan collaborators. Holding Board meetings in Pakistan was a thoughtful move.</p>	2

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>6. Pakistan</b> <i>(Continued)</i></p>	<p>IIMI has also examined the apparent ambiguity in the wording of the agreement between IIMI and the Government of Pakistan, which notes that IIMI-Pakistan is both autonomous and an integral part of the Institute as a whole. The Director General has discussed the matter with the Directors of IIMI-Pakistan and officials of the Government of Pakistan. All parties have agreed that programmatic and administrative integration can be and is being addressed through the regular internal mechanisms of Management. IIMI's management believes that the principle of integration of IIMI-Pakistan within the Institute as a whole is now firmly agreed upon by all parties.</p> <p>Several specific measures have been taken to reinforce earlier efforts for bringing IIMI into closer working relationships with Pakistan authorities, including the holding of the Fifteenth Meeting of the Board of Governors in Lahore and Islamabad in April 1993. This event provided an excellent opportunity for IIMI's Board and Management to meet with key Government of Pakistan officials; the event also permitted a field visit to one of IIMI's study sites in Punjab, from which a fairly intimate appreciation of the Institute's programme was obtained. Linkages were also strengthened by the appointment as Director for Research of IIMI's former Director for Pakistan, Dr. Jacob Kijne.</p>		

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>6. Pakistan (Continued)</b></p>	<p>The results of improved relations are apparent. At the request of the Government, IIMI is now playing a leading role in assisting government agencies in the planning and implementation of the research component of a major WAPDA-executed irrigation and drainage project in Punjab. Considerable progress has been made on the provision by the Government of Pakistan of an office building for IIMI's work in the country.</p> <p>The Government of Pakistan is now clearly aware of IIMI's organizational arrangement with respect to its work in Pakistan, and has accepted that this work forms an integral part of IIMI's programme and therefore cannot be regarded as a separate autonomous body. Since this integration is now more transparent, and has been fully discussed with the Government, changes in the Memorandum are considered to be unnecessary at this stage.</p>		
<p><b>7. Legal Status and Governance</b></p> <p>The panel recommends (Page 15) <i>"that IIMI Management investigate the strategies that have been developed to obtain international organization status for several of the CGIAR Centres and consider whether the Institute should move to seek such status"</i>.</p>	<p>During 1990, IIMI corresponded with the CGIAR and its legal adviser in the World Bank concerning the matter of true international status. The advice from both parties was that if IIMI is not having any serious problems with its present status, IIMI would be advised not to undertake the long and difficult process of a status change. Since IIMI has no problems regarding its status in Sri Lanka, IIMI has accepted the advice of the CGIAR and its legal adviser and has not pursued this matter further.</p>	<p>IIMI has adequately dealt with this Recommendation.</p>	<p>2</p>



Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>8. Organizational Structure</b></p> <p>The Panel recommends <i>"that the Director General and the Board of Governors consider an administrative organizational structure that will facilitate the design and execution of a cohesive, well-integrated institute-wide programme"</i>. (Page 24)</p>	<p>IIMI has implemented this recommendation in two stages:</p> <p>(i) At the June 1990 Board meeting, the Board approved a set of changes in IIMI's organizational structure and coordinating mechanisms, aimed at ensuring that all IIMI's activities could be integrated into one effective and coherent programme. Key among these measures was the creation of the position of Director for Research, to replace the earlier position of Director for Programmes. The Director for Research would be responsible for all the research and training activities of the Institute, both those undertaken by its country units (including Pakistan) and those undertaken by IIMI's thematic staff, and also act as the second-in-command at IIMI. After an extensive search process, Mr. Khalid Mohtadullah was selected for the position, and joined the staff in May 1991.</p> <p>(ii) In mid-1992, the Board approved a further set of changes in IIMI's organizational structure and coordinating mechanisms, aimed at ensuring that IIMI's organizational structure supported the changes in Strategy and Medium Term Plan that resulted from IIMI's entry into the CGIAR system. Key among these measures was the creation of a Deputy Director General post, to enable the Director for Research to concentrate only on research. In January 1993, Mr Khalid Mohtadullah was appointed Deputy Director General, and Dr. Jacob Kijne was appointed Director for Research.</p>	<p>Moves have been made but the resulting structure is not yet satisfactory. The administrative organizational structure has been given relatively too much attention, and in relation to its past, is too complex, oversized and expensive.</p>	<p>1</p>

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>9. Indirect Costs</b></p> <p>The Panel recommends <i>"that IIMI's management:</i></p> <p><i>a) Review the components of indirect costs to ensure that all legitimate elements are included.</i></p> <p><i>b) Move vigorously to incorporate indirect costs into all project budgets and explore the possibility of renegotiating existing contracts".</i></p> <p>(Page 35)</p>	<p>IIMI's Management Committee at its March 1990 meeting thoroughly reviewed the components of the Institute's indirect costs and made a number of decisions regarding what should be legitimately classified as an indirect cost. These decisions were subsequently endorsed by the Institute's Governing Board at its June 1990 meeting.</p> <p>Since early 1990, every project proposal submitted to a donor, with the exception of those for small training grants, incorporates in the budget an indirect cost recovery element based on IIMI's most recent estimate of indirect costs as a percentage of total direct costs. IIMI has been undertaking its best efforts to have the donors accept both the principle of indirect costs recoveries and the rates proposed and documented by IIMI. The Institute has largely been successful in these latter endeavours.</p> <p>There were several occasions involving USAID projects where IIMI was successful in renegotiating a somewhat higher rate of indirect costs. However, in most instances where renegotiation was possible, the Institute was facing a fixed sum contract, meaning that whatever funds were reallocated to indirect costs would have been at the expense of programme activities. Hence, it was not deemed advantageous to attempt a renegotiation of indirect cost recoveries in such instances.</p>	<p>IIMI has met the terms of the Recommendation in a formal sense, and in some respects may have gone too far.</p>	<p>2</p>

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<p><b>10. Project Budgets and Staff Orientation</b></p> <p>The Panel recommends <i>"that project budgets be drawn up so as to permit new international staff to spend a substantial period of time at headquarters so that they will come to understand the Institute's strategic and operational goals, organizational culture, and administrative procedures"</i>. (Page 40)</p>	<p>Various provisions have been employed as from 1990 to ensure that new international staff understand IIMI's strategy and ethos, as well as IIMI's administrative and financial procedures. The IIMI guidelines for developing project budgets now explicitly call for an international travel provision which provides for up to two visits per year to IIMI's headquarters by the international staff to be assigned to the project, and up to two visits per year to the project's field location by IIMI's senior management personnel. In addition, if routing convenience permits, IIMI routes international staff joining a project through Sri Lanka so that the staff may receive a proper orientation. In cases where project exigencies require joining staff to proceed directly to the project, IIMI endeavors to arrange for such staff to visit headquarters at the earliest opportunity for orientation purposes.</p>	<p>IIMI appears to have met the terms of the Recommendation. However, field staff still consider the interchange between HQ and field inadequate. There is no data on how much time new staff spend at HQ before going to the field.</p>	2
<p><b>11. Position Classification System</b></p> <p>The Panel recommends <i>"that IIMI's management design and install a position classification system applicable to all national staff positions"</i>. (Page 42)</p>	<p>At the time of the Review, IIMI had a position classification scheme for the "General Category" of national staff in Sri Lanka. The General Category covers staff who do not have either professional qualifications or management (as opposed to purely supervisory) responsibilities, and includes seven categories of staff ranging from unskilled workers to skilled cadres such as maintenance, secretarial, and junior accounting staff.</p>	<p>Some details may still need to be ironed out to avoid long-term negative impact on staff morale.</p>	2-

Recommendations of 1990 Review	IIMI's Response	Panel's Remarks	Score
<b>11. Position Classification System</b> <i>(Continued)</i>	<p>However, at the end of the Review, IIMI did not have a position classification scheme for national staff posts in Sri Lanka that required professional qualifications or managerial responsibilities, and which therefore fall under the "Professional and Management" staff category. Hence the Panel's recommendation and that of the consultant commissioned by IIMI was, in effect, to introduce a position classification system in Sri Lanka for this latter category, a recommendation predicated on the assumption that such a system would accommodate the growth of the national staff in Sri Lanka. A consultancy on this matter was undertaken in late 1992, and refined during the first part of 1993. As a result, a new position classification scheme for professional and management staff has been designed. It is expected that the new system will be in place by the final quarter of 1993.</p>		

GLOSSARY OF ACRONYMS

ADB	Asian Development Bank
AfDB	African Development Bank
AGRICOLA	CD-ROM: All Aspects of Agriculture
AGRINET	Agricultural Information Network
AGRIS	Agriculture Information System
AQALINE	CD-ROM: Water, Waste Water and the Aquatic Environment
BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit (Germany)
CABI	CAB International
CADSWES	Centre for Advanced Decision Support in Water and Environmental Sciences
CAPS	Core Add-on Projects
CC	Consultative Committee
CCOD	Current Contents on Disk
CD-DIS	CD-ROM: Foreign Assistance Projects and Programmes of the US Agency for International Development
CD-ROM	Compac Disc-Read Only Memory
CEC	Commission of the European Communities
CEMAGREF	Centre National du Machinisme Agricole, due Génie Rural, des Eaux et des Forêts
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centre Internacional de Agricultura Tropical
CIEH	Comité Interafricain d'Etudes Hydrauliques
CIFOR	Centre for International Forestry Research

CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
CIP	Centro Internacional de la Papa
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement
CORAD	Conference des Responsables de la Recherche Agronomique
CP	Country Project
DANIDA	Danish International Development Association
DDG	Deputy Director General
DG	Director General
DIC	Director of International Cooperation
DR	Director of Research
DSE	Deutsche Stiftung für Internationale Entwicklung
EMR	External Management Review
ENVIRNET	Environmental Information Network
EPMR	External Programme and Management Review
EPR	External Programme Review
F&A	Finance and Administration
FAO	Food and Agriculture Organization of the United Nations
FMIS	Farmer-managed Irrigation Systems
GIS	Geographical Information System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HQ	Headquarter
HR	Hydraulic Research Wallingford, UK
HRO	Human Resource Office
IARCs	International Agricultural Research Centres
IBSRAM	International Board for Soil Research and Management



ICARDA	International Centre for Agricultural Research in the Dry Areas
ICLARM	International Centre for Living Aquatic Resources Management
ICID	International Commission on Irrigation and Drainage
ICIMOD	International Centre for Integrated Mountain Development
ICRAF	International Council for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDB	Inter-American Development Bank
IDRC	International Development Research Centre, Canada
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IGBP	International Geosphere-Biosphere Programme
IHE	International Institute for Infrastructural, Hydraulic and Environmental Engineering
IIMI	Intentional Irrigation Management Institute
IITA	International Institute of Tropical Agriculture
ILRI	International Institute for Land Reclamation and Improvement
ILWIS	International Land and Water Information System
IMCD	Irrigation Management for Crop Diversification in Rice-Based Systems
IMIN	Irrigation Management Information Network
IMPSA	Irrigation Management Policy Support Activity
INRA	Institut National des Recherches Agronomiques
IPR	Internal Programme Review
IPTRID	International Programme for Technology Research in Irrigation and Drainage
IRRI	International Rice Research Institute
IS	Institutional Strengthening

ISM	Irrigation System Management
ISNAR	International Service for National Agricultural Research
ISPAN	Irrigation Support Project for Asia and the Near East
IUCN	International Union for Conservation of Nature
LAN	Local Area Networking
MOU	Memorandum of Understanding
MTP	Medium-Term Plan
NARS	National Agricultural Research Systems
NGO	Non-Governmental Organization
NIA	National Irrigation Administration
NRI	National Resources Institute
O&M	Operation and Management
ODU	Overseas Development Unit
ORSTOM	Institut Francais de Recherche Scientifique pour le Développement en Coopération
PC	Personal Computer
PDO	Project Development Office
PEEM	Panel of Experts on Environmental Management of Vector Control
PSG	Programme Support Group
SCOR	Shared Control of Natural Resources
SOILCD	CD-ROM: Soil Science, Fertilizers and Soil Amendments
SSA	Sub-Saharan Africa
SSY	Senior Staff Years
TAC	Technical Advisory Committee to the Consultative Group on International Agricultural Research
TROPAG+RURAL	CD-ROM: Tropical Agriculture and Rural Abstracts
UN	United Nations

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	US Agency for International Development
USBR	United States Bureau of Reclamation
WANA	West Asia and North Africa
WARDA	West Africa Rice Development Association
WHO	World Health Organization
WRA	CD-ROM: Water Resource Planning, Management and Control
WUA	Water Users Associations