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REPORT OF THE TAC FACT-FINDING MISSION TO THE  
INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE (IIMI)

TAC SECRETARIAT

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TAC FACT FINDING MISSION TO NON-ASSOCIATED CENTRES

REPORT ON

INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE

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## 1.0 BACKGROUND

### 1.1 A Brief History of the Institute

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 center to carry out multi-disciplinary 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 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 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 it financially inopportune to add to the thirteen centers already funded, and rejected the recommendation. Instead it encouraged interested members to explore the establishment of a center along the lines recommended by TAC, and to mobilize new funds for this. TAC initiated the formation of a Support Group of fourteen potential donors. The Support Group met in Washington D.C. in October 1983 and decided to support IIMI as an independent international organization. Executive actions to establish the institute were entrusted to the Ford Foundation. Control of the newly formed IIMI passed to the Institute itself in January 1985. Meanwhile the constituted Board of IIMI had sought a location for their 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 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 late 1984 and expanded its occupation during 1985, commencing operations early that year.

During the formative years 1983-85 the dominant contributors were the Asian Development Bank, the Ford Foundation and the USA. These three provided US\$1.52 million (78%) of the total budget of US\$1.94 million in 1985. At the third meeting of the Board in July 1985, it was agreed to found a branch of IIMI in Pakistan and to take over the management of the services and facilities in Digana Village from March 1986. The Support-Group, meeting in October 1985, approved these decisions.

Since 1985 IIMI has established a liaison office in Colombo, the capital of Sri Lanka, and has created country offices with resident scientists in the Philippines, Indonesia, Nepal, Burkina Faso, Pakistan, Bangladesh, Morocco and the Sudan.

## 1.2 Current Legal Status

IIMI was formally established in 1985 by Act of the Parliament of the Democratic Socialist Republic of Sri Lanka as an "autonomous organization, international in character." Its Memorandum of Agreement with the Government accords it privileges and immunities "which shall be no less favorable than granted to the UNDP Office in Sri Lanka." Details of its legal status, objectives etc., are set out in formal Charter (copy supplied).

## 1.3 The Institute's Mission and Clients

The September 1988 draft strategy document states:

[IIMI exists] "to strengthen national efforts to improve and sustain the performance of irrigation systems in developing countries, through the development and dissemination of management innovations."

'National efforts' in this statement subsumes IIMI's image of its clients which includes all who manage irrigation systems. The ultimate beneficiaries of IIMI's products and services are the farming community; farmers tenants, landless people, hired and migrant laborers whose livelihoods depend on irrigated agriculture [Strategy Paper pp. 9]. IIMI does not expect to develop a direct relationship with these large, dispersed beneficiary groups. It will focus its efforts on government agencies, parastatals, non-government organizations and farmer or tenants groups at higher levels of the management hierarchy.

IIMI's emphasis is on the improved performance of irrigation systems through better management. One of its early needs is seen to be the development of consistent definitions and measurements of each component of performance; productivity, equity, reliability, sustainability, profitability and quality of life.

## 2.0 THE INSTITUTES PROGRAMME

### 2.1 The Institutes Strategy

#### 2.1.1 Past Strategy

From 1984 to present IIMI had to build up access to collaborating countries because irrigation management only can be studied in living irrigation projects. This pragmatic strategic activity showed success and growing demands in the past years, but implied certain consequences;

- National agencies, besides the difficulty to find the good partners, have a tendency to give priority to solve "own" problems (often short term).
- Donors have a (strong) tendency to demand quick results and prefer yearly budgets.
- IIMI, as a third point of the triangle had to defend multi-country interests and to fight for longer term budgets, but not every battle could be won.

### 2.1.2 Future Strategy

For the coming period a 5 to 10 year Strategy document has been drafted and is to be published. The five year workplan and budget document is currently being discussed by staff. IIMI wants to serve as a center for innovation in 2 ways:

- a. development through research of management-innovation in 7 chosen fields:
  - Institutions for irrigation management
  - Management of change in the institutions of irrigation
  - Management of water resources for irrigation
  - Management of irrigation facilities
  - Management of irrigation organizations
  - Management of financial resources for system sustainability
  - Management of irrigation support services for farmers
- b. assistance to national irrigation agencies to adapt and implement the innovations in their own circumstances.

Therefore IIMI needs; First, a Programmes Division for thematic research (plus Training and regional programmes). A good example is the recently published study on Dry-Season Irrigation Management for rice-based Systems (March 1989). Second, a Division for field operations. Up to present such operations exist, besides the special branch in Pakistan, in Sri Lanka, Indonesia, Philippines, Bangladesh, and Nepal, are under way for Sudan, Morocco and West Africa, and, with a "non resident" structure, in India. Other countries interested in cooperation are China, Thailand, Mexico, India (see above) and perhaps Egypt.

### 2.1.3 Strategy in Transition

In matters of strategy, IIMI is in period of transition. This is excellently illustrated and formulated in 4 reports:

Annual Report 1987  
 Review of Activities 1988 + Workplan 1989 and beyond  
 Proposed Programme & Budget 1989  
 Strategy Paper for 5-10 years.

Staff-discussions on the Five Year Workplan and Budget started on April 24th. For IIMI's planning in the short-and medium terms a conversion to "rolling" five year plans (five year plans which are annually revised) is foreseen.

## 2.2 Constraints addressed

Most irrigation systems perform far below their potential; weak management, rather than technology, is considered to be the most important cause of this disappointment. Irrigation is not only a water delivery service but has agricultural, social, institutional connotations. Management therefore is concerned with the water supply, the human inputs, agricultural outputs and the information needed.

In many developing countries, especially those with a long irrigation tradition, administrations/agencies overemphasize the supply of water. Existing rules and procedures often have a rigid and bureaucratic character. The growing demand for water for urban and industrial use, for household-water for growing populations, and sometimes the degraded quality of irrigation water (pollution and salinization), tends to accentuate concern with water distribution.

It is important that the broader IIMI-definition of irrigation management is supported and propagated.

IIMI stipulates that management research is needed:

- on productivity
- on equity between head and tail end farmers
- on sustainability of the systems
- on the quality of life

On the definition of irrigation management one may ask:

- has it to include adaptation of advanced technologies e.g. Remote sensing
- can it exclude technical aspects e.g. drainage to fight salinization and water logging?
- how serious are health-risks in irrigation management; malaria, bilharzia



- how rigid/flexible a system has to be to guarantee on one hand an optimal water supply to crops and on the other hand leave sufficient freedom/choice for the farmers. (diversification of crops, choice of varieties and cropping periods.)

Research done on crop diversification for dry-season irrigation illustrates that a series of second generation constraints may arise. These may be irrigation-related; although non-rice crops need much less water, the intermittent or rotational supply requires more care from the irrigation agency and from the farmer (who has to be present to receive and apply the water). They may be economic; though net economic result (profits) for non-rice crops are often much higher than with rice, inputs (cash and labor) also are higher. This may raise credit problems. Finally they may be agronomic; farmers who have grown irrigated rice are unfamiliar with agronomic practices for irrigated non-rice crops such as corn, peanuts, soybean.

### 2.3 The Programme approach and operation

IIMI programme approach to field operations differs from the approach to thematic research. In both cases, history and financial characteristics of IIMI funding played a major role on the programme approach and operation.

#### 2.3.1 Field Programme Approach

The field programmes always start by a phase of identification of possible recipient country and potential donor. In general, board members played an important role for both. For example Mr. Nanda Abeywickrema from Sri Lanka, when on board of IIMI, worked extensively with the Center's staff to set up a "Consultative Committee" and have that Committee decide the kind of operations are needed for Sri Lanka. Another example; The board member from Asian Development Bank (ADB) played an important role by indicating, in an early stage, the interest of its institution in financing irrigation management research for countries in which IIMI wanted to go. In some cases (West Africa) the initiative was taken by IIMI to contact potential donor (African Development Bank = ADB) and possible recipient countries (Burkina Faso, Mali, Senegal, Niger, Nigeria).

This preliminary step is followed by some variant of a phased approach; for example: First phase, a "facts finding mission" studies the targeted country irrigation management institutions (agencies, ministries, universities), the so called "Consultative (or advisory) Committee on irrigation management" is revived or established. This multidisciplinary body assembles all national interested interveners, future partners of IIMI. With the help of IIMI major issues and constraints are then identified and prioritized.

The second phase of the programme approach consists in the choice of the theme of the future field operations. When IIMI is in its first collaborative work in a country, the views of the "Consultative Committee" prevail if not challenged by the donors - As one of the field officers stated, H.Q. involvement is minimal; the Consultative Committees always retain "obvious problems."

In the third phase intensive discussions with the donors are conducted as dialogues between 3 groups, the donors, the national collaborators and IIMI. As loans or grants are given to the countries and not to IIMI, it is understandable that the center plays the role of a facilitator in these discussions.

### 2.3.2 Thematic Research Approach

The approach is different for a thematic programme. IIMI considers such research as aimed to develop generic innovations that may be applicable in a variety of environments (see "the strategy", page 31). Field research activities are a significant source of data and experience from which the H.Q. (program division) will generate IIMI's thematic research programmes. Contrary to field research operations, the H.Q. plays the major role; the countries "Consultative Committee" take a minimal part (if any) in this aspect. An example is the proposed thematic work on management for diversification in rice-based cropping systems:

### 2.3.3 Operating Approach

All IIMI research activities are operated on a collaborative mode, with national agencies. The centre's mandate and strategy imply close co-operation with national institutions from irrigation management to extension agencies and universities. The number of collaborators is increased in the case of thematic research. For example the project on "Problems of Irrigation Management for rice-based farming systems" draws together 2 IARCS (IRRI & IIMI) and 12 national institutions in 3 countries. (See attachment Summary of research programs.)

Some local agencies would prefer a contract type of relationship. In one case IIMI recruited local staff and conducted a provincial survey in Pakistan.

## 2.4 The Research Programme; Strategic, Applied, Adaptive

IIMI's research vocabulary (if not concepts) is different from those of the CG. This center terms its field research as "adaptive or action research" In CG terms most of it is of an "applied" nature because the responses to the five major questions on irrigation management in the developing world (see "The strategy" pages 21 and 22) need more than adapting ready-made methodologies. The annexed project summary illustrates this affirmation.

IIMI thematic research may in the future call for "strategic" research, because of the need for new knowledge to bridge the gaps which may appear as output of the periodic reviews and the need to update the "state of the art." (See "The strategy", page 31.)

## 2.5 Training

IIMI has identified management training as one of the priority areas of work in order to attain its objectives.

During the first four years of IIMI's existence, training was carried out under the Professional Development Programme. The objectives of this programme was to promote opportunities for researchers from different countries to improve their professional capabilities in irrigation management through doctoral, masters and post-doctoral programmes; special awards; on-the-job training; and workshops, conferences and training courses.

Recognizing the need to intensify such efforts, IIMI, in late 1988, secured support from USAID to finance the employment of a full-time Training Specialist. Initial funding commitments by aid are for a three year period. The specialist has been employed and seems to be approaching her task with ability, vigor and enthusiasm.

### 2.5.1 Training Strategy

In its Strategy document, a draft of which was issued in September, 1988, IIMI proposed the following training strategies:

- Recognizing that the demand for training is potentially much greater than IIMI can address, the Institute must concentrate in certain areas where it possesses a comparative advantage.
- To conform with its mission, IIMI's training should emphasize management issues and should help national agencies to develop innovative capabilities in this area.
- It is recognized that national training needs are best satisfied by national training organizations. An international organization such as IIMI is not oriented towards providing sustained training courses for individual countries. IIMI will, therefore, assist and cooperate with existing national institutions with responsibility for irrigation management training. Where such institutions do not yet exist, IIMI will help to stimulate the creation and development of such capacity.

- IIMI will also help to develop national systems of innovation by training people to conduct research and analysis of training questions.
- IIMI's primary focus will be on the improvement of management skills not on the development of general irrigation skills or an understanding of irrigation technology, per se.

The three primary recipients or target groups of IIMI's training will be irrigation managers, trainers and researchers. The institute's management training activities will contain a mixture of direct and indirect approaches. Direct training sessions conducted by IIMI personnel and collaborators will concentrate on the transmission of knowledge and experiences aimed at encouraging the implementation of innovations. This will be aimed primarily at practicing irrigation managers. Indirect training (which refers to the process by which IIMI supports national training organizations) will constitute the larger part of the programme. In this area, IIMI's activities will concentrate upon:

- advice in curriculum development;
- the generation of widely used training materials; and
- the professional development of national training staff.

IIMI suggest that regular training programmes are appropriate in three major subject areas:

- management of the irrigated agriculture sector;
- management of irrigation organizations; and
- improving the skills of the managers of irrigation systems.

Although the training focus will be on management rather than on technical matters, this will not be training in the abstract. The training will focus on how, through better management, irrigation systems can be made to function more effectively while using the best and most appropriate technical information available.

### 2.5.2 Progress and Achievements

Information concerning training activities in 1988 provides some indication of IIMI's progress in implementing its strategy.

In 1988, IIMI had associated with its country programmes a number of professionals working on the Ph.D. and Masters theses, supported through restricted funds. There were a total of 10 Ph.D. and 5 Masters' research fellowships -- associated with the IIMI field operations in Pakistan, the Philippines and Indonesia. The Ph.D. fellowships were for one to two years and the Master programmes for 6 to 12 months.

In addition there were two post-doctoral fellowships associated with the program in Sri Lanka.

INFORMATION OFFICE  
FUNCTIONAL CHART  
Annex to Reorganization of Information Program

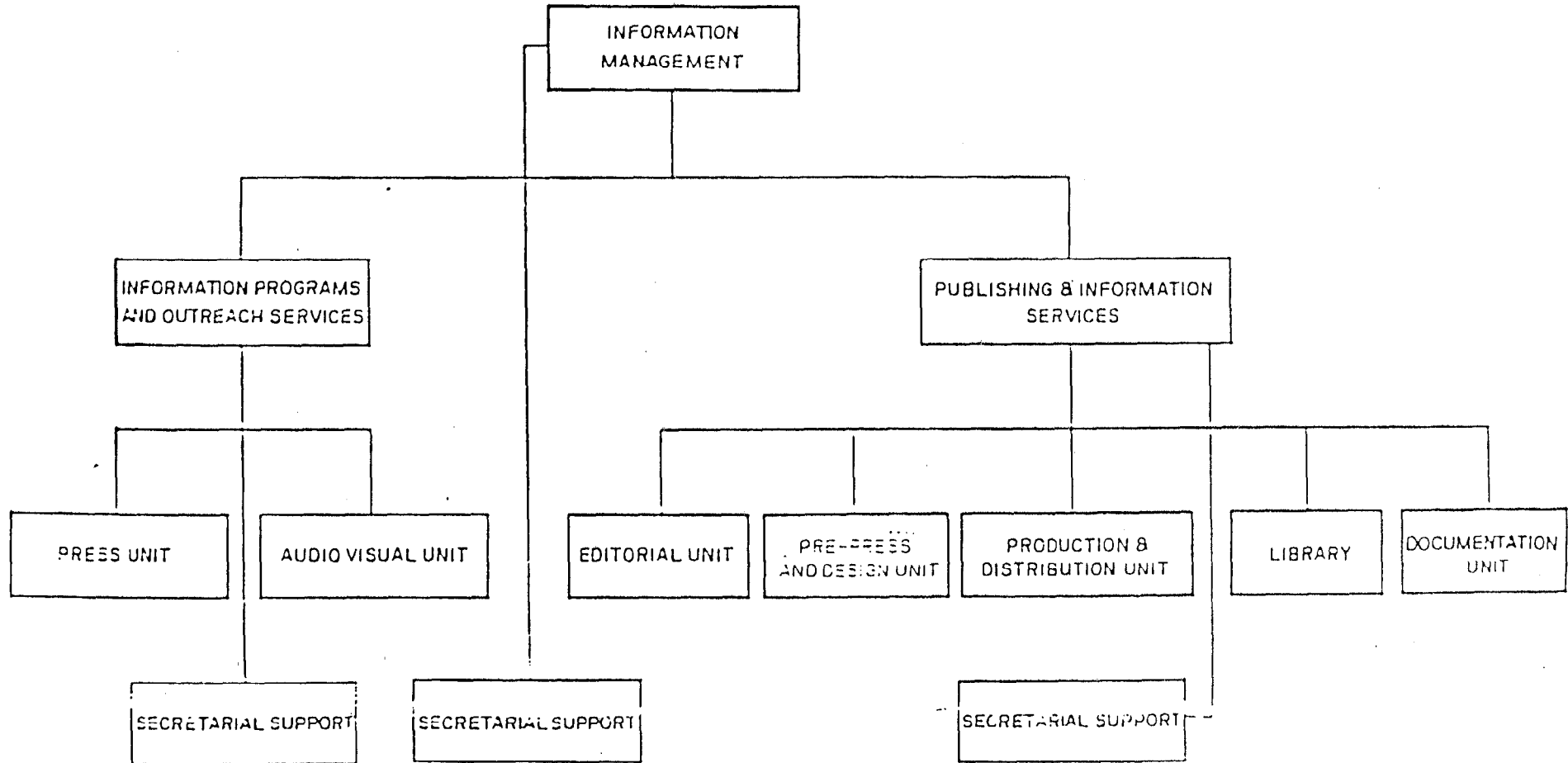


Figure 1.

In 1988 there were 5 IIMI workshops and conferences -- 2 in Sri Lanka, 2 in Thailand and 1 in the Philippines.

One "Special Award" was made for a 2 month case-study of an irrigation management issue.

### 2.5.3 Proposed Activities

With the employment of a full time training specialist, IIMI expects to accelerate its training activities. Currently, for example, it is estimated that an average of 3% of senior staff time is devoted to training. Leaders of IIMI's programmes suggest that the Institute's goal is to increase this figure to 10%.

Plans are now being formulated to focus on helping to strengthen national training programmes. In 1989, IIMI is concentrating on the following:

- Identifying national partners to assist through in developing their overall training activities.
- Making formal assessments of training needs in irrigation management, at the national level and at the level of individual agencies.
- Assisting national training agencies in designing effective irrigation management training programmes and in developing the materials and methods for carrying them out.
- Assisting senior researchers in adopting improved irrigation management concepts.

In addition to the above, IIMI will continue and, possibly, expand its activities related to workshops and conferences, research fellowships and special awards.

### 2.6 Information Services

The IIMI Information Office provides a range of services in support of the Institute's overall research and training programme. The various functional units are indicated in the organizational chart for the office (Figure 1).

### 2.6.1 Strategic Plan

In its 1988 strategy document, IIMI identified three levels of target audiences for its Information Programme:

- Those people who are in positions where they can put into practice management innovations developed by IIMI and its collaborating agencies. This involves people in middle to senior management positions and at policy making and decision taking levels -- predominantly in ministries and irrigation management organizations.
- Those concerned with the study or analysis of irrigation management as well as those engaged in developing management innovations. This group involves managers and researchers in management organizations and research and training institutions.
- Those who maintain an interest in IIMI's activities and progress, including representatives of donor agencies and stakeholder groups, as well as other international centers doing related work.

In serving these various groups, IIMI will concentrate on the following types of publications:

- Project reports; which describe in full detail the activities and results of specific field work.
- Technical publications; including working papers, research papers, occasional papers, case studies and other types of series.
- Management briefs, involving summaries of findings of major research primarily intended for middle to senior level irrigation officials.
- Journal articles for publication in leading scientific journals, with reprints made available for distribution to IIMI's primary audiences.
- Newsletters, involving network information and theme-specific research results aimed at irrigation management specialists and researchers.
- Seminar proceedings which will be the product of IIMI seminars given by senior staff and selected visitors and published in a "state-of-the-art" series on relevant topics.

In addition to its technical publications, IIMI will develop a communications and public affairs network with a view to providing more general news and information concerning Institute programmes to broader audiences than those primarily concerned with research and irrigation

management. This will include the quarterly IIMI Review, press releases and other information materials issued on a regular basis.

As efforts in this area are expanded, there will be progressively greater emphasis given to the area of audio-visual communications. Videos and other types of audio-visuals will be used to support the public affairs network as well as to meet the needs of the research staff.

IIMI will also maintain and expand its internal library and information database for internal use by the Institute and its collaborators. IIMI does not plan to build up a general external services based on these resources.

English will serve as the working language of the Institute. However, with the establishment of programs in West Africa, it is recognized that French is increasingly needed as a second working language. IIMI also recognizes the importance of disseminating materials in other languages that are widely used in its collaborator countries -- languages such as Urdu, Tagalog, Bahasa Indonesia and, in time, others such as Spanish, Chinese and Hindi.

#### 2.6.2 Publications Policy

IIMI is in the process of developing a document setting forth its publication policies. Such a document should incorporate and make operational many of the elements of its strategies summarized in the foregoing section.

#### 2.6.3 Review of Information Programmes

The International Development Research Center (IDRC) has recently financed a consultancy for the purpose of reviewing IIMI's information programmes and making recommendations for their improvement. The report of the Consultant has been received and the Institute is considering its response. The Institute indicates that the study should provide the basis for the further refinement of its information policy and its strategic and operational implementation.

#### 2.6.4 Activities

The implementation of IIMI's strategic plan is well under way. A recent IIMI report<sup>1</sup> documents the activities of the Information Office in 1988. Some of these activities are summarized as follows:

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<sup>1</sup> "Review of Activities During 1988 and Proposed Workplans for 1990 and Beyond". IIMI. February, 1989.



Some 27 publications, papers and serials were published in the period through October 31. This included two issues of the IIMI REVIEW, the 1987 Annual Report, three issues of the FMIS Newsletter, one technical publication, three working papers, two occasional papers and one catalogue of documents. Through the ODI/IIMI cooperative publishing network, three papers, a register of members and a newsletter were issued by mid-1988, and additional papers were foreseen by the end of the year.

Total distribution of internally produced publications was 15,500 copies (to the end of October, 1988).

In addition to the free distribution currently in operation, arrangements are being made with Trips in the FRG and the Agribookstore in the U.S. to cover promotion to libraries and institutions in Western Europe and North America, respectively. There will be a charge made for selected publications distributed through these channels.

As of November 1, 1988, the headquarters library contained approximately 4,200 titles compared to 2,600 at the same time in 1987. This represented a 60% increase in available material. There is, however, a backlog of some 2,400 titles on hand but not shelved. Eighty-eight periodicals are received regularly.

At the end of October 1988, the headquarters data base included 4,000 entries, of which some 3,000 entries were shared with ODI on the IMIN data base. This represents an increase of 43% in the previous 12-month period. The IIMI Bibliography continues to be published, with the 2 issues of Volume 1 published and distributed and Volume 2/1 in production and Volume 2/2 in preparation. Regular seminars are now being organized and a Seminar Summaries will be published from this activity. Some 2,000 slides have been assembled and catalogued. From these, a master selection of some 700 slides has been made with slides to be made available for circulation, loaned, and use in print and other media. In recent months a Press Releases series has been initiated with three issues to date. A Press Officer was recruited at the end of the year and a international expert is present on contract to act as editor for the IIMI Review and assist in outreach activities.

The Director General recognizes the need for more "formal" publications by IIMI staff in contrast to those at the "working paper" level. This would involve more in-house publications as well as papers in well recognized professional journals.

## 2.7 The Regional Distribution of Programmes

IIMI is working in 10 countries in Asia (7 countries) and Africa (3 countries) through 9 field offices and one non-resident staff (in India)- Until 1988, Asia who possesses the world's largest irrigated area (70%) was the unique continent served by IIMI. A project in Latin America will probably be undertaken in 1990-91.

The "strategy" setting exercise had stressed the utmost importance for IIMI to work in the major irrigation ecologies. When adopted, the strategy will bring, in the long run, changes in the regional distribution of the Center's programme. There is a need for more indepth characterization of the criteria retained for the definition of these ecologies in "The strategy" - (See page 48, 3rd para.)

## 2.8 Future programme plans

The future of IIMI's programme plan depends on two major issues: The completion and adoption of the "strategy" and the evolution in the Center's funding pattern.

Let us suppose a shift will occur, bringing more unrestricted funds to IIMI's budget. Then, there will be two modifications in the long run. First the geographical distribution: IIMI is considering work in 12 countries on 3 continents, 8 in Asia (Sri Lanka, Pakistan, Philippines, Nepal, Bangladesh, Indonesia, India and China); 3 in Africa (West Africa, Sudan, and Egypt); 1 in Latin America (Mexico).

IIMI research activities will focus on 7 themes (see "Strategy" page 24), 3 of which are of the highest priority, namely:

- Institutions for irrigation management,
- Management of change in the Institutions for irrigation,
- Management of irrigation facilities,

The ranking of the remaining 4 themes will change from one country to another.

- Management of irrigation support services to farmers,
- Management of water resources for irrigation,
- Management of irrigation organizations,
- Management of financial resources for systems sustainability.

A possible second modification in the future, if unrestricted funds are increased to a reasonable level of IIMI budget, the scope of the so called thematic research will tend to grow. In 5 to 10 years, IIMI is likely to move to more upstream research, as national institutions are set-up to take over the collaborative research programmes.

## 3.0 RESEARCH RESULTS AND IMPACT

### 3.1 General impact

In assessing the results and impact of IIMI's research programme, it must be recognized that the Institute is a relatively young organization,

having been in existence for slightly more than 5 years. Most of its research activities were initiated within the last 3 years, many during the past 12-15 months. It would be difficult, therefore, for an institution like IIMI to demonstrate a major impact in such a short time.

While recognizing these circumstances, there are many indications of significant progress by IIMI towards carrying out its stated mission.

For example, a recent summary of IIMI's programme activities included a listing of some 48 research projects, most of which are either already under way or have been approved for implementation with donor funding. A brief summary of each of these projects, found in Annex. ..., provides some indication of the range and scope of these research activities. The description of project objectives, set forth in these summaries, also suggest the potential impact of this work.

Given the nature of its activities, IIMI personnel recognize the difficulty of measuring the specific impact of Institute activities. For example, one senior staff member commented to the effect that IIMI's work would not be expected to have the dramatic and easily measurable impact of an IR-8 rice variety. Nevertheless, there is confidence that IIMI's efforts can contribute to incremental changes that, in time, will have a significant impact on the improvement of irrigation systems along with the agricultural systems which they serve.

How to increase the output and impact of IIMI programmes was discussed at the recent meeting of the Institute's Programme Committee. Moreover, the Director General discussed this matter in his report to the Executive and Finance Committees at their meeting in March, 1989.

In his remarks, the Director General recognized that IIMI's mission of "developing and disseminating innovations" requires the Institute to go beyond the conduct of research in the management of irrigation systems. IIMI's collaborators, the national irrigation systems, must obviously be willing to adopt the innovations suggested by IIMI research before the performance of irrigation systems can be improved.

The unique nature of IIMI's mission prompted one member of the "fact-finding" team to ask if the Institute's mission was research or was it extension. In the response by staff, it was recognized that IIMI's research mission was different from that of commodity oriented centers. However, one programme leader commented: "If one is doing work to understand the nature of systems, as we are doing, this is research. Moreover, if one is doing work to solve problems, as we are doing, this is research". It was recognized, however, that IIMI's responsibilities go beyond research; it also has responsibility for the dissemination of information, working closely with national irrigation systems to encourage the adoption of improved management practices.

Particular emphasis was placed by senior staff on efforts to sustain irrigation systems and irrigated agriculture. It was recognized that special attention needed to be given to how irrigation systems could be managed to

avoid the sort of degradation or deterioration that has occurred in many systems. Water logging and salinity problems were cited as examples of the types of difficulties which must be avoided.

### 3.2 Specific Research Contributions

A number of specific research results and contributions by IIMI to the improvement of national systems were cited by staff and have been reported in IIMI's publications. Following are examples of achievements indicated in the 1987 annual report:

- Developed a simple, low cost methodology for measuring field water adequacy, productivity, and equity for water distribution in low-land rice irrigation systems in Sri Lanka.
- Developed a concept and methodology to quantify the relative equity between the "head" and "tail" in irrigation systems in Sri Lanka.
- Identified and field-tested research methodologies to discover effective and responsive practices for operating main canals in Sri Lanka.
- Concluded research to examine the cause of unreliability and inequity in water distribution along the main canals of two major systems in Pakistan.
- Concluded a study of large farmer-managed irrigation systems in Nepal, the results of which led to a series of recommendations to the government on ways to assist the systems.
- Completed Phase 1 of an Asian Development Bank's study in Indonesia and the Philippines to identify new irrigation practices to meet the complicated irrigation management requirements for diversified agriculture in the dry season.
- Helped the Center for Agro-Economic Research in Indonesia to implement field research into irrigation constraints.
- **Initiated and implemented a three-year collaborative research programme with IRRI, focussing on problems of irrigation management for rice-based cropping systems.**

In his recent report to the IIMI Executive and Finance Committees, the Director General cited the following examples of significant progress or achievements:

"(1) The recent publication of the first draft of our report to the Asian Development Bank, (representing) a comprehensive syntheses of the first several years of IIMI's work on the interaction between design and management in main canals, the management of irrigation systems for diversified cropping in the dry season, and the management of financial resources for system sustainability in Asia; and (2) the conclusion of an innovative study of the internal management process of a Sri Lankan irrigation agency, utilizing techniques from the social and managerial sciences, which has resulted in a number of key recommendations to the agency concerned on ways to improve its decision making process."

In comments to the Review Team, the Director General referred to examples of other specific achievements "we are proud of":

- In Sri Lanka, studies of the extent to which farmers should take a more active role in the management of irrigation systems are leading to a rather rapid acceptance of new approaches in this area by government officials.
- In Nepal, IIMI's presence has had a significant impact on the thinking of officials with regard to how the Government could better assist farmers in managing irrigation systems.
- In Indonesia, IIMI 's work is developing the basis for managing water resources more efficiently, leading to less wastage.

Contributions of a different nature were cited by one of IIMI's senior staff. It was suggested that one significant impact of IIMI's work is "in helping to set the agenda that people use when considering irrigation". He cited an example of the contributions of a major study by IIMI of irrigation service fees -- pointing out that this study was helping to shift the focus from the mere cost of water to how the fee structure for water can contribute to system performance. He emphasized that once users realize that they were paying the cost of irrigation water they will be more concerned with better management.

Perhaps much of the significance of what IIMI does was summed up by a senior staff member when he said that in the long run, one of IIMI's primary contributions may be in raising the consciousness concerning opportunities to improve the performance of irrigation systems and the need to give priority attention to such efforts.

## 4.0 GOVERNANCE, MANAGEMENT, AND METHODS OF OPERATION

### 4.1 Governance and Structure

Since its inception, IIMI has been modelled on the concepts of the CGIAR. Not surprisingly, therefore, its overall structure is similar to that of the CGIAR Centers. It has a "Donor Support Group", which might be regarded as partly substituting for the CGIAR, a "Board of Governors", performing functions that are identical to those of the Boards of Trustees of the CGIAR Centers, and a management structure broadly tailored to the needs of its strategy.

The Donor Support Group, which is continuing to expand, meets once a year. The meeting is serviced by IIMI, but IIMI does not perform the functions of a secretariat. Consequently the Donor Support Group has no way of operating collectively or of making decisions during the periods between its annual meetings.

The Donor Support Group appointed all the initial Board members. Thereafter, the Board agreed to appoint some of its members from those candidates nominated by the Support Group. This condition applies to four Board members, two of whom are replaced at one time. In the most recent Board appointments, these two positions were filled from a list of five candidates presented by the Support Group to the Board. As with CGIAR donors, IIMI donors adopt different attitudes to the criteria for Board membership. Although the agreed criteria relate only to considerations of individual merit, it is clear that some donors have pushed the candidacy of their own nominees.

The Support Group elects its Chairman from among its members for an indefinite period. Although the Group discusses IIMI's activities, it does not intervene on policy and management issues, which it delegates to the Board. Its primary task is fund-raising. It has also assumed responsibility for mounting the first external review of IIMI, scheduled for the second half of 1989. The current Donor Support Group is listed in annex 4.1.

The Board initially comprised 14 members. The Support Group encouraged a reduction to 12. A total of 13 (including the Chairman), has now been recommended for the future by the Executive and Finance Committee of the Board. There are two ex-officio members: a representative of the host country, Sri Lanka; and the Director General of IIMI. Other members are chosen to be widely representative of the region and for their personal expertise. Those countries that are hosts for IIMI projects are invited to nominate candidates for the Board, but there is no guarantee that they will be appointed.

As with the Boards of CGIAR Centers, members are appointed for three years, renewable for one further three-year period only. The Board has determined, and keeps under review, its own rules and procedures. It has three committees: the Executive and Finance Committee; the Programme Committee; and the Nominating Committee. The functions of these Committees correspond with similar committees of the board of CGIAR Centers.

An organizational chart, showing IIMI's management is attached. The Director General and the four Programme Directors constitute the Management Committee. Created relatively recently, this Committee has met only twice, but is scheduled to meet four times a year.

## 4.2 Methods of Operations

IIMI's strategy demands a de-centralized mode of operation in collaboration with national agencies and farmer groups, either through IIMI staff working "on location", or through regular visits by headquarters staff to country projects. Typically, staff on location consist of teams of two or three IIMI staff, augmented by local staff on secondment. Staff on location may also participate in the thematic studies at headquarters, but this requires careful planning of agreements and budgets. Budgetary arrangements must have the flexibility to provide logistical support to sites remote from headquarters, to permit the necessary international travel, and to charge some of the time of out-posted staff to headquarters activities.

## 4.3 Relations with Other Institutions

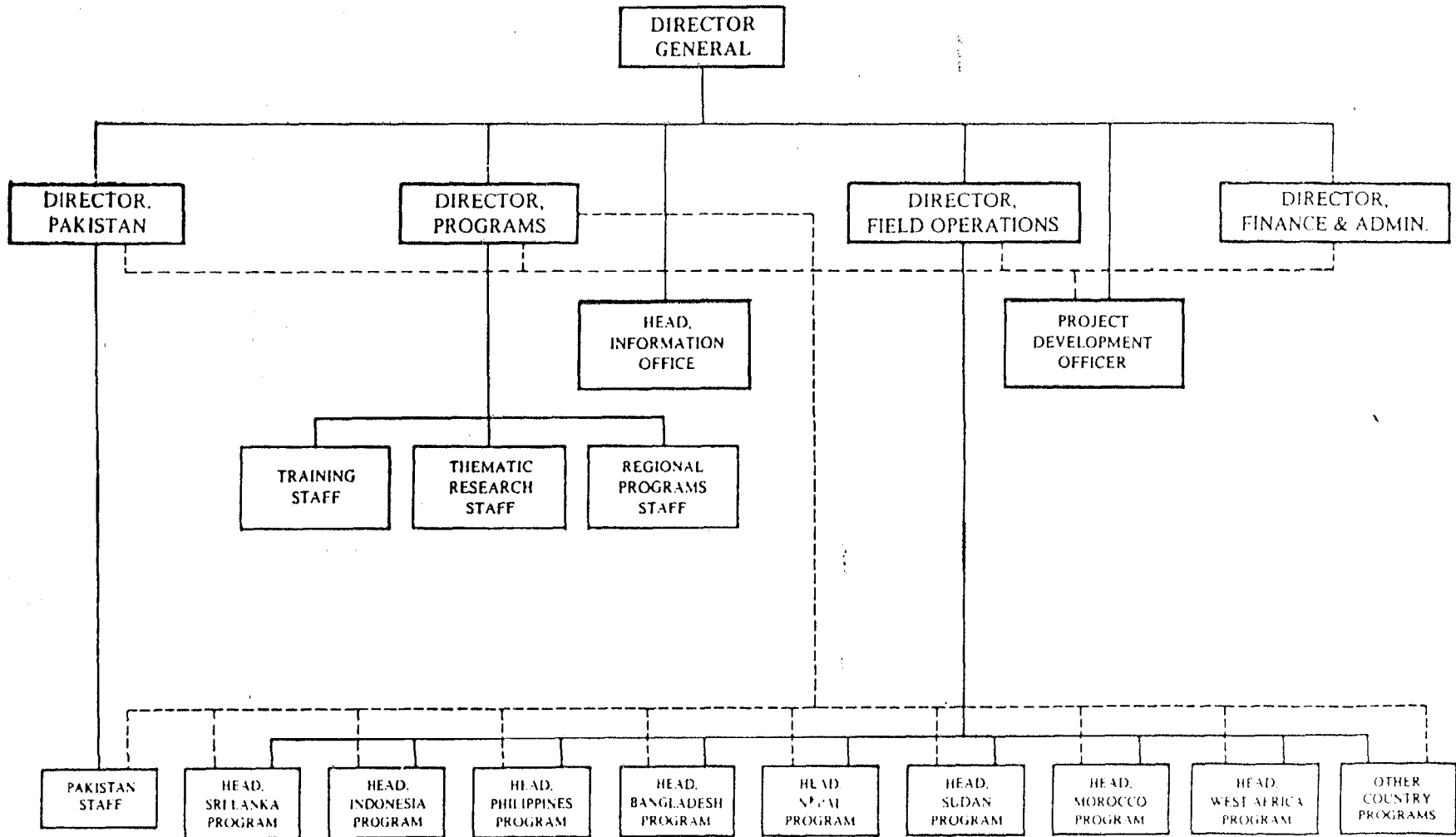
### 4.3.1 National Programmes

IIMI's de-centralized mode of operation calls for continuous interaction with national authorities and institutions, as well as with non-government organizations. Considerable time must be spent in negotiating agreements or letters of understanding, as appropriate. These negotiations are commonly with the agency responsible for the management of irrigation systems, but might also involve the research services or individual institutes.

In its country projects, IIMI works under the general guidance of a "consultative committee", "standing advisory committee" or "steering committee", which not only assists collaboration between IIMI and the various institutions in the country, but also helps to foster closer collaboration among the national institutions and agencies themselves. In many countries, IIMI has found this to be of particular importance in stimulating greater cooperation between irrigation officials and staff of the agricultural services.

Figure 2

# INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE (ORGANIZATION CHART)





In most of the collaborative research that IIMI undertakes with national agencies, the networking principle is less applicable than with the production research of many CGIAR Centers, because there is no common theme that is widely researchable. Nevertheless, IIMI sees the establishment of information networks (as distinct from research networks) as an important aspect of its activities. The joint ODI-IIMI publications on Irrigation Management provide a good example.

#### 4.3.2 Other IARC's

As far as the CGIAR Centers are concerned, IIMI's strongest links are with IRRI and IFPRI through collaborative projects. Informal discussions have been held with WARDA regarding possible future collaboration, but plans for collaboration with CIMMYT were shelved when IIMI's funding crisis receded. There may well be future opportunities for collaboration with CIMMYT, but IIMI's view is that these should be driven by the need to solve problems in irrigation management related to wheat, rather than by the need to raise funding.

#### 4.3.3 Institutions in Advanced Countries

With its decentralized mode of operation, IIMI has recognized the need for its staff, especially those in field operations, to maintain professional contacts with the wider world. Its new strategy seeks to meet this need partly by the flexibility to involve out-posted staff in thematic research. At present, linkages with advanced institutions are established on an ad hoc basis, as needed, but such linkages are not yet as numerous or as strong as those that have been forged by the CGIAR Centers. However, current negotiations with Australia and Japan have the strengthening of such linkages very much in mind.

## 5.0 A PROFILE OF INSTITUTE RESOURCES

### 5.1 Physical facilities

IIMI occupies Digana Village near Kandy. The village was built to accommodate workers constructing the Victoria Dam. IIMI accepted an invitation from the Sri Lankan government to use it as headquarters. It includes office and housing facilities. IIMI took over the maintenance and servicing of the whole complex, including roads and other infrastructure, in 1986. However, the costs of this commitment were high and the Board divested IIMI of this obligation from mid 1987. The Institute continues to support the Club, the School and the Clinic, all of which are attractions to staff, at an annual cost of US\$130,000 (1988).

A new headquarters complex for Digana village, funded through a World Bank loan to the Sri Lanka Government, was approved by the Board. Construction began at the site in mid 1988. However the construction company being bankrupted, work on the complex at Digana has stopped.

The location of IIMI in Digana Village, some 2-3 hours inland from Colombo, has costs in logistical terms, and also in terms of professional isolation. The Board has recommended that the Institute move to Colombo and this has recently (May 1989) been approved by the Sri Lanka cabinet. Management propose to use rented accommodation for a period to allow them to plan for more permanent accommodation. The transfer of IIMI HQ to Colombo will be effective from September 1, 1989.

## 5.2 Staff resources

By the end of 1988 IIMI had 23 internationally recruited staff with 103 locally recruited national professionals and 152 other national support staff. Table 5.2 shows the build up of staff since 1985, and projected expansion through 1994. It shows a ratio of 5.2 local support staff for each international staff member, this includes 3.4 national professionals.

Table 5.2 The build up and projection of IIMI staff resources

Year	85	86	87	88	89	90	91	92	93	94
International staff	14	20	19	23	28	38	44	50	58	66
National Staff										
Professional	16	38	63	103	113	130	150	170	195	225
Support	42	132	132	152	172	200	230	265	300	345
Total National Staff	58	170	198	255	285	330	380	435	495	570
Total Staff	72	190	217	278	313	368	424	485	553	636

- Notes:
1. Staff members numbers are at 31 December of each year.
  2. For international staff, figures from 1990 through 1994 include international consultants.
  3. For national staff, figures from 1987 onwards include national staff in IIMI's field office locations.

**Of 27 international staff members currently in 1989 16 are posted in collaborating countries with 11, including the 4 of the 5 person Directorate, at HQ in Sri Lanka.**

### 5.3 Financial Resources

From 1989 IIMI distinguishes unrestricted and restricted funding, using these terms to replace the 'core' and 'special projects' categories used historically.

The 1989 Programme and Budget document gives the history of IIMI funding since inception in 1984. The figures show a rapid overall increase in funding from US\$ 740,000 in 1984 to US\$ 5.8 million in 1988. There was an increase in unrestricted support from 1984-1986 when unrestricted funds represented 70% of total resources. 1987 brought a down turn which continued into 1988 when unrestricted were only 26% of total funds.

There was a funding problem in 1986, caused by programme commitments running ahead of donor support. It was alleviated by extra contributions from the World Bank and the Ford Foundation. A Director of Finance and Administration was appointed and gave particular attention to cash flow.

IIMI's draft Strategy paper (September 1988) sets out future financial strategy (pp. 65-66). Unrestricted funds will be sought for central activities, including thematic research, and to help stabilize country program activities. IIMI's de-centralized country based programs allow it to exploit restricted project funding from donors interested in irrigation improvement in the particular countries concerned. Some central activities, specially Finance and Administration, but also aspects of Information and Management training will be charged out to country project grants on the basis of activity by these units on behalf of the particular country project. This is expected to reduce the requirement for unrestricted funds.

For 1989 the estimated total of restricted funds is US\$ 5.27 million. For 1989 two scenarios were painted for unrestricted funds, one an increase to US\$ 2.265 million, one a reduction to US\$ 1.715 million. The latter scenario reducing the scope of planned thematic research. For 1989 in practice US\$ 1.58 million has been made available by the Donor Support Group, supplemented by US\$ .25 million carried over from 1988.

Table 5.3 shows projected expenditures for 1990-1994 under discussion by management but not yet approved by the Board.

Table 5.3 - 1990-1994 projected expenditures (Constant 1989 \$' 000)

OPERATIONAL EXPENDITURE	1990	1991	1992	1993	1994
International salaries, benefits	4,080	4,694	5,398	6,208	7,138
National staff salaries, benefits	1,360	1,565	1,780	2,070	2,380
Other expenditures	4,450	5,121	5,872	6,772	7,787
TOTAL OPERATIONAL EXPENDITURE	9,890	11,380	13,050	15,050	17,305
CONTRIBUTION TO RESERVES	50	140	160	200	260
TOTAL FUNDS REQUIRED	9,940	11,520	13,210	15,250	17,565

The table shows a projected rate of growth in funding of 15% per year rising to a budget of US\$ 17.57 million by 1994. This represents an expenditure of US\$ 268,000 per international scientist. Contributions to reserves are intended to maintain reserves at one month of operating expenditure. They now total US\$ 900,000.

Using the CGIAR Activities list and deducting 20% for Governance and Administration gives the following approximate allocations.

Activity No.	Title	%
1	Water Management Research	60 )
15	Human Resource Enhancement	7 )
16	Conferences and Workshops	3 )
		) 80%
17	Documentation & Dissemination of Information	7 )
21	Coordination of Research Networks	3 )

Because of the multi-disciplinary nature of IIMI's research, 'Water Management Research' and other activities subsume several social science activities (No. 22,23,24).

## 6.0 ISSUES AND CONCERNS

Two concerns of the Institute surfaced during discussions at IIMI. One concern is the difficulty of obtaining adequate funding for the thematic research to be coordinated by IIMI's programme divisions, and for headquarters services. These activities have to be supported by unrestricted funding. Even if donors would agree to a levy from bilateral funding of projects, collaborating countries may perceive such a levy as a deduction from their own funding. IIMI sees better prospects of solving this problem through membership of the CGIAR.

A further concern was whether IIMI's research activities are congruent with research activities of the CGIAR, and whether their particular orientation would inhibit entry to the group. The report touches this point in section 2.4.

The report makes reference to several IIMI documents and publications. Those available with the TAC Secretariat for the use of TAC members are listed below:

- The Charter and Founding Documents
- IIMI's Board of Governors- Rules and Procedures
- Informal Understanding: IIMI Support Group
- Draft Minutes 11th Meeting IIMI Donor Support Group (1988)
- Minutes of Board Meeting (1984, 1988)
- Review of Activities during 1988 and proposed workplans for 1989 and beyond (1989)
- IIMI Strategy Document (September 1988 -draft)
- Proposed Programme and Budget for 1989

Annex 3.1 : SUMMARY OF RESEARCH PROJECTS

Indonesia

1. Title: Efficient Irrigation Management and System Turnover (Phase II)

Objectives: 1) To improve O&M of large-scale irrigation systems through modification of existing management techniques and introduction of alternative procedures, and 2) to assist in the pilot project to turn over O&M responsibility in small irrigation systems less than 150 hectares (ha) and later 500 ha to farmer organizations.

Start and Completion dates: 1 October 1987 - 30 September 1989

Donor and Estimated cost: The Asian Development Bank (ADB) Ford Foundation - US\$1,024,000

2. Title: Support for Workshops and Counterpart Engineer

Objective: To facilitate dissemination of innovations and results of field-testing to provincial irrigation services through workshops, and to provide additional counterpart support to IIMI from DGWRD

Start and Completion date: 1 January 1987 - 30 March 1989 (extended from 30 June 1988)

Donor and Estimated cost: Ford Foundation - US\$25,200

The Philippines

3. Title: Irrigation Management for Diversified Crops

Objectives: 1) To develop a methodology or criteria for identifying parts of systems most suitable for diversified crops, 2) to compare the profitability and performance of selected diversified crops under irrigated and rain-fed condition, 3) to identify the primary factors and their interaction which condition how farmers prepare their land for irrigated rice in the wet season and for one or more diversified crops in the dry season, 4) to develop on-farm irrigation methods for at least one upland crop, and 5) to design and field-test operating procedures for publicly managed portions of irrigation systems; to recommend those policies most likely to support profitable farming practices and investments in irrigation development for diversified crops and to suggest guidelines for irrigation management practices.

Start and Completion date: 1 February 1987 - 30 June 1989

Donor and Estimated cost: The Asian Development Bank (ADB) - US\$415,000

4. Title: Cooperative Agreement for Irrigation Research Component of Accelerated Agricultural Production Project (AAPP)

Objective: To provide research results and management innovations which support implementation of the irrigation component of the USAID-financed AAPP.

Start and Completion date: March 1989 - February 1991

Donor and Estimated cost: USAID - US\$640,000

5. Title: Review of NIA's Participatory Programme in Irrigation Development and Management (Philippines)

Objectives: 1) To review NIA's participatory programme in irrigation development and management with emphasis on the process of strengthening farmers' organizations through joint system management; 2) to conduct specific studies on the impact of farmers' participation on the several criteria used in measuring system performance such as water utilization, equity, productivity, maintenance standards, and generation of finance for recurring expenditures; and 3) to develop a simplified methodology for assessing system performance in connection with objective 2 which can be implemented at the irrigation superintendent's level.

Start and Completion date: Mid -1989 - Mid-1991

Donor and Estimated cost: The Asian Development Bank (ADB) - US\$525,000

### Nepal

6. Title: WECS/FORD Project in Sindhupalchok

Objective: The primary objective of this action-research project is to develop a viable process by which to assist farmer-managed systems in overcoming the constraints limiting intensification and expansion of irrigated agriculture.

Start and Completion date: January 1986 - December 1988

Donor and Estimated cost: Ford Foundation and IFAD - (Note: Until 1988 the individual activities in the Nepal programme were not budgeted separately).

7. Title: Preparation of paper for presentation at irrigation sector coordination meeting

Objective: To list a series of recommendations to be considered in the preparation of the irrigation master plan.

Start and Completion date: January 1988 - February 1988

Donor and Estimated cost: UNDP - US\$8,000

8. Title: Performance Evaluation of a Large-Scale Farmer-Managed Irrigation System

Objectives: 1) Examine the agricultural system to determine if a) cropping decisions are constrained by lack of dependable irrigation water, and b) special variation in yield of each crop is related to water stress. 2) Evaluate the performance of the irrigation system by monitoring a) access to water both among systems competing for the same source and by potential new members, b) equity of access by members of the system with the right to use water, c) efficiency in utilization of the water resource, and b) the effectiveness of organized response to water stress and conflict among members.

Start and Completion date: May 1988 - September 1988

Donor and Estimated cost: IFAD -

9. Title: DOI/IIMI Collaboration

Objectives: 1) To develop a process that can be used by the newly established district irrigation offices to identify, rank, select, design, and improve/construct small-and medium-scale irrigation systems with full beneficiary involvement in making the physical improvements and full responsibility for O&M; 2) To provide support to DOI in adjusting policies and procedures to accommodate the needs of a flexible field-oriented programme.

Start and Completion date: Undetermined

Donor and Estimated cost: Undetermined - US\$1,440,000



## India

10. Title: Initiation of Collaborative Research and Training Activities with Indian Institutions

Objectives: To explore and initiate collaborative projects between IIMI and Indian institutions engaged in research, training, and information exchange in irrigation management. The principal objective is to strengthen the capacity of Indian institutions to contribute to the improvement of irrigation performance in India.

Start and Completion date: 2 September 1987 - 1 September 1989

Donor and Estimated cost: The Ford Foundation - US\$ 200,00

## Sri Lanka Field Operations

11. Title: Predoctoral Research Fellowship (S. Abeyratne)

Objective: Document and analyze the impact of state intervention on property relations in two irrigation systems

Start and Completion date: September 1986 - 1 March 1988

Donor & Estimated cost: Unrestricted IIMI funds in 1986-87; IFAD/BMZ\* in 1988 - US1,500 (staff time and production costs for publication and distribution) in 1988 (1986-87 costs not available)

12. Title: Enhancing Capacity for Professional Management of Irrigation Systems

Objectives: To strengthen national agencies through research on the agencies' management processes, with particular reference to the decision-making and implementation process and performance monitoring and control, and feedback of results to agency leaders to establish a dialogue on the implications of the findings.

Start and Completion date: August 1986 - July 1988 (2 papers to be finalized later in 1988)

Donor and Estimated cost: Unrestricted core funds - Total not available

13. Title: Land Settlement Planning for Improved Irrigation Performance
- Objective: To identify land settlement planning activities that may contribute to improved irrigation performance in (a) new irrigated settlement schemes and (b) those under rehabilitation.
- Start and Completion date: 1 September 1987 - 31 December 1988
- Donor and Estimated cost: Ford Foundation - US\$25,000 (not including international staff time)
14. Title: Institutional Development in a New Settlement Scheme
- Objective: To document and analyze the process of development of new institutions at both farmer and agency levels in a new irrigation scheme, as a prelude to research anticipated under ADB funding (ADB-TASL)
- Start and Completion date: October 1986 - December 1988
- Donor and Estimated cost: Unrestricted core funds - Total not available
15. Title: Management of Rehabilitation in Uda Walawe
- Objective: To document and analyze the rehabilitation project as a management process in terms of the roles of the implementing agency, donor, consultants, contractors, and farmers, and evaluate the efforts to consult farmers and build farmers' organizations.
- Start and Completion date: October 1986 - August 1988
- Donor and Estimated cost: Unrestricted core funds - Total not available
16. Title: Action Research in Irrigation Management for Crop Diversification
- Objective: Testing management interventions that would promote reliability and equity of supply at turnouts along distributaries, and proper sharing of irrigation supply below turnouts.
- Start and Completion date: Ongoing action research intervention phase commenced in yala 1987 - September 1991
- Donor and Estimated cost: Unrestricted core funding from IIMI; future funding not determined as yet - (1989) Staff salaries, local staff travel, supplies etc: US\$12,500

17. Title: Irrigation Systems Management (ISM) Project

Objective: 1) To provide research results which strengthen implementation of the USAID-funded ISM Project; and 2) to strengthen national capacity for carrying out effective applied research on irrigation management problems.

Start and Completion date: 18 August 1987 - 30 June 1990

Donor and Estimated cost: US Agency for International Development (USAID) - US\$395,150

18. Title: Irrigation Management and Crop Diversification (Sri Lanka)

Objectives: To identify, through field-level research, means to increase use of existing land, water and infrastructure resources through improvements that could be made in the processes of design, rehabilitation, system management, and operation and maintenance with particular attention given to requirements for crop diversification.

Start and Completion date: 1 February 1988 - 30 March 1990

Donor and Estimated cost: Asian Development Bank - US\$454,000

19. Title: Analysis of Irrigation Decision-Making Processes

Objective: To analyze the decision-making processes in irrigation management from the setting of objectives to the delivery of water.

Start and Completion date: 6 January 1988 - March 1990

Donor and Estimated cost: Netherlands/IIMI - US\$7,350 for 1988, US\$18,800 for 1989, not including staff time or Government of Netherlands' contribution.

20. Title: Improvement of Water Management of Minor Cascade Tank Systems

Objectives: Analyze the actual status of water management in a minor cascade tank system, including water balance; and develop operational rules for increased water efficiency and to alleviate the impact of droughts.

Start and Completion date: Toward the end of 1988 (to be determined) - Three years after the start date

Donor and Estimated cost: Tropical Agriculture Research Center (TARC) of Japan (which will be the principal implementing organization too) - Not clear

21. Title: Improved Management of Water Resources in a New Irrigation System

Objectives: A recent study (Elkaduwa 1987) has established that water use in certain parts of Mahaweli System C is far in excess of levels compatible with full (and sustainable) project development. The proposed study seeks to understand the process of mobilization, allocation, conveyance and distribution of water for identifying and implementing management innovative practices leading to improved use of irrigation water in System C.

Start and Completion date: September 1989 (estimated) - September 1992

Donor and Estimated cost: Japanese International Cooperation Agency (JICA) or World Bank (WB) (to be approached)

22. Title: Designing Organizations for Integrated Management of Irrigation Systems

Objectives: To assist in reforming and strengthening national and farmer-level irrigation institutions through applied research that supports a process of strategic planning to establish appropriate irrigation policies and institutional designs; analysis of options for organizational transformation to develop institutions for high performance irrigation; and involvement of national management research and training institutes in solving irrigation management problems through applied research and improved training methodologies.

Start and Completion date: Mid-1989 (if possible) - 1995

Donor and Estimated cost: To be determined - Not determined

23. Title: Rehabilitation and Improvement for Management (Asian Development Bank-Regional Technical Assistance (ADB-RETA), Activity A)

Objectives: 1) Analyze how main canal design affects the performance and manageability of irrigation systems through a comparative study of four systems built with different design criteria. 2) Bring awareness amongst decision makers and irrigation managers about problems regarding the regulation of flow in main canals in the region and their consequences.

Start and Completion date: January 1988 - March 1989

Donor and Estimated cost: ADB - US\$161,000 financed by ADB and US\$97,000 financed by IIMI

24. Title: Activity B of the Asian Development Bank-Regional Technical Assistance (ADB-RETA) No. 5273: Dry-Season Irrigation Management

Objectives: 1) To undertake a comparative analysis of research results for Indonesia, the Philippines and Sri Lanka; and 2) to prepare for the establishment of a research network on irrigation management for diversified cropping in rice-based systems in Asia.

Start and Completion date: February 1988 - End March 1988

Donor and Estimated cost: ADB - US\$131,000

25. **Title:** Financing the Costs of Operation and Maintenance (Asian Development Bank-Regional Technical Assistance (ADB-RETA) activity C: Field Studies in Sri Lanka)

**Objectives:** 1) To describe the O&M procedures with special reference to: a) organizational arrangements within the managing agency, b) magnitude and nature of current O&M expenditures, c) proportion of capital and recurrent costs, and d) mechanism by which water users' desires are reflected in the decisions on O&M. 2) To analyze factors affecting farmers' fee payment with special reference to a) institutional arrangements, b) fee level and benefits from water, and c) farm characteristics. 3) To identify strategic factors that bring about effective O&M.

Start and Completion date: April 1988 - March 1989

Donor and Estimated cost: ADB, US\$86,000

26. **Title:** Financing the Costs of Operation and Maintenance (Asian Development Bank-Regional Technical Assistance (ADB-RETA): Activity C: Sri Lanka National Case Study)

**Objectives:** To describe and analyze the policies and practices for financing the provision of irrigation services, particularly the cost of operation and maintenance. The sources of resources and the procedures for allocating resources for irrigation will be examined. Special attention is given to the type and amount of resources provided by farmers, especially the policy and procedures concerning irrigation service fees. Some analysis of the farmers' ability to pay for irrigation and the implication of different levels of cost recovery will be analyzed.

Start and Completion date: February 1988 - March 1989

Donor and Estimated cost: ADB - US\$20,000 of US\$83,000 budget for Activity C.

27. **Title:** Basic Irrigation Economics Project

**Objectives:** To provide the policy makers and IIMI with a better understanding of the relative economic profitability of different investment alternatives among new irrigation construction, irrigation rehabilitation, and irrigation management improvement.

Start and Completion date: October 1988 - October 1989

Donor and Estimated cost: Japan International Cooperation Agency - US\$8,000 (not including staff time)

### Sri Lanka

28. Title: Design & Management interactions in irrigation systems in Sri Lanka - Application of mathematical models for simulation of main canal operations (Phase 1).

Objectives: 1) Validate on a real case study a general methodology appropriate to conduct investigations and research on main canal operations and design and management interactions at main system level, and provide IIMI a State-of-the-Art research tool tailor-made for this.

Start and Completion date: late 1987 - 1989

Donor and Estimated cost: Government of France and others: (Amount not fixed).

### Pakistan Division

29. Title: Irrigation Management in Outlet Commands

Objectives: 1) Define the quality of irrigation services available to farmers in different hydrologic and agro-ecological environments; 2) Determine their irrigation practices and cropping responses to varying degrees of irrigation service; 3) Identify successful watercourse-levels of irrigation service.

Start and Completion date: 15 April 1990 - 15 October 1993

Donor and Estimated cost: USAID, IFAD - US\$250,00

30. Title: Irrigation Operations to Accommodate Demand

Objectives: 1) Define constraints in delivery of irrigation supplies according to crop needs; 2) Identify and develop operationally feasible irrigation management options to accommodate demand; 3) Test feasible options of modified demand-based operations in traditional and modernized irrigation systems.

Start and Completion date: 1989 - 1992

Donor and Estimated cost: Core Support, ODA - US\$458,000

31. **Title:** Farmer-Managed Irrigation Systems in Northern Areas
- Objectives:** 1) Comparative assessment of irrigation system goals and efficiencies in new and previously existing Gojal FMIS; 2) Identification of major factors (both physical and operational) that govern irrigation efficiencies in Gojal FMIS.
- Start and Completion date:** 15 March 1989 - 15 September 1989
- Donor and Estimated cost:** Aga Khan Foundation - US\$50,000
32. **Title:** Application of Geographic Information Systems to Irrigation Management
- Objectives:** 1) Demonstrate to agencies the applicability of GIS for meeting irrigation management information needs; 2) Develop a capacity for an IIMI-wide use of GIS in irrigation management research.
- Start and Completion date:** 15 April 1989 - 15 April 1991
- Donor and Estimated cost:** USAID (Phase I); Australian Development Assistance Bureau or Royal Netherlands Government (Phase II) - US\$289,000
33. **Title:** Management of Information for Irrigation
- Objectives:** 1) Assist irrigation agencies to modernize information systems for system management and interagency coordination; 2) Shift emphasis from record maintenance to collection of limited and focused data of high reliability and utility appropriate to computer storage and processing; 3) Develop information feedback mechanisms for agency managers.
- Start and Completion date:** 1 August 1987 - 31 December 1991
- Donor and Estimated cost:** USAID, IFAD - US\$323,000
34. **Title:** Interagency Coordination
- Objectives:** 1) Identify institutional features that facilitate or obstruct improved coordination among irrigation agencies; 2) Define information requirements for field-level interagency planning and coordinating; 3) Develop a structure and process for agencies to communicate information and coordinate activities for effective irrigation management.

Start and Completion date: 1 February 1988 - 31 December 1991

Donor and Estimated cost: USAID, IFAD - US\$279,000

35. Title: Irrigation Constraints to Crop Production

Objectives: 1) Investigate irrigation-related constraints and their impact on production of principal crops; 2) Assess from existing information, optimal patterns of irrigation for major crops; 3) Investigate farmers' decisions regarding irrigation to ascertain how and why their practices differ from the optimal and to assess the impact of such differences upon crop yield.

Start and Completion date: October 1987 - September 1992

Donor and Estimated cost: USAID, IFAD, proposed to ODA - US\$400,000

36. Title: Managing Conjunctive Use for Irrigation and Drainage

Objectives: 1) Evaluate organizational and operational Structure for conjunctive management of public tube well and canal systems; 2) Develop and test organizational changes and alternative management strategies to meet more effectively irrigation and drainage requirements in conjunctive use environments.

Start and Completion date: 1 January 1990 - 31 December 1992

Donor and Estimated cost: KFW or USAID - US\$450,000

37. Title: Measures of Irrigation Performance

Objectives: 1) Measure the production per unit of water and per unit of irrigation area, at farm and watercourse levels; 2) Seek explanations for disparities found in irrigation performances at different locations.

Start and Completion date: 15 April 1989 - 15 July 1992

Donor and Estimated cost: ODA - US\$326,000

38. Title: Development and Management of Private Tube Wells

Objectives: 1) Determine private tube well ownership patterns; 2) Quantify tube well water demand and identify arrangements to meet requirements; 3) Measure interference effects of tube well clustering.

Start and Completion date: 1 October 1988 - 30 September 1990

Donor and Estimated cost: USAID, ISPAN - US\$150,000



39. Title: Reliability and Equity in Main Channels

Objectives: 1) Determine the effect of flow changes in the head reaches of main channels upon water deliveries to distributary channels in lower reaches; 2) Determine causes of variability in supplies at the main system level; 3) Identify management options for operating large channels under conditions of water shortage to make deliveries more reliable and equitable.

Start and Completion date: 1 July 1987 - 31 December 1991

Donor and Estimated cost: USAID - US\$630,000

40. Title: Rehabilitation Strategies

Objectives: 1) Evaluate impact of rehabilitation strategies upon surface water deliveries; 2) Determine most cost-effective approaches for distribution system rehabilitation through comparative analysis of actual rehabilitation strategies.

Start and Completion date: 1 December 1986 - 31 December 1991

Donor and Estimated cost: USAID - US\$326,000

41. Title: Combined Surface and Groundwater Management

Objectives: 1) Determine actual distributary command water budgets and de facto conjunctive use operations; 2) Define institutional arrangements for private tube well management and operations in varying hydrologic environments; 3) Identify impacts of public tube well turnover on irrigation system performance and design strategies to facilitate equitable access to groundwater; 4) Develop institutional alternatives and managerial procedures for public tube well turnover to farmers; 5) Determine options to balance groundwater extraction and maintenance of water tables.

Start and Completion date: 1 February 1988 - 31 December 1991

Donors and Estimated cost: USAID, IFAD, World Bank - US\$513,000

42. Title: Variability and Equity in Distributary Channels

Objectives: 1) Determine causes of fluctuation in distributary discharges and its impact on equity of water deliveries to offtakes in different hydrologic environments; 2) Assist IDs in identifying management options that reduce variability and inequity in irrigation

deliveries; 3) Adapt computerized hydraulic model to test different canal operation scenarios.

Start and Completion date: July 1987 - 1991

Donor and Estimated cost: USAID - US\$629,000

43. **Title:** Managing Irrigation Systems to Minimize Waterlogging and Salinity Problems

**Objectives:** 1) Identify and define linkages between irrigation and drainage systems management and the incidence of waterlogging and salinity (W&S) problems; 2) Design, test and refine irrigation and drainage system management strategies to minimize W&S.

Start and Completion date: Third quarter 1988 - 1993

Donor and Estimated cost: Royal Netherlands Government

44. **Title:** Institutional Arrangements for Water Management Extension

**Objectives:** 1) Investigate the farm community's present sources of ideas and knowledge about field water management practices; 2) Propose institutional arrangements to facilitate effective transfer of proven and improved field water management practices; 3) Assist in developing extension materials based primarily upon IIMI-initiated farm-level irrigation management research.

Start and Completion date: 1 January 1991 - 31 December 1994

Donor and Estimated cost: ODA - US\$331,000

45. **Title:** Support for Chitral Area Development Project (Pakistan)

**Objectives:** To develop an assessment methodology for selecting FMIS for rehabilitation and identifying priority needs in existing and new systems. [Other objectives to be identified after consulting with project officials and partner organizations].

Start and Completion date: January 1989 - December 1990

Donor and Estimated cost: IFAD/BMZ - US\$40,000

46. **Title:** IIMI/IRRI Collaborative Project on Problems of Irrigation Management for Rice-Based Farming Systems

**Objectives:** 1) To characterize the factors which influence the options for changes in rice-based farming systems, and to identify the more important options in selected geographic locations; 2) to determine the degree to which different levels of irrigation system performance influence the ability to incorporate changes in the farming systems effectively; 3) to develop efficient and economical methods for managing based systems in which non-rice crops are grown, with special reference to implications for agronomic practice and for institutional performance and change; 4) to transmit and interpret the research findings to agricultural and irrigation system managers, planners and policy makers to encourage informed and better decision making; 5) to enhance the development of trained professionals in the area of irrigation problems through provision of graduate research opportunities; and 6) to provide opportunity for IRRI and IIMI staff to interact in a variety of collaborative activities which would permit the development of an effective and mutually supportive long-term relationship.

**Start and Completion date:** 1 July 1987 - 30 June 1990

**Donor and Estimated cost:** Rockefeller Foundation - US\$1.2 million to IIMI and US\$0.3 million to IRRI

47. **Title:** Research Network on Irrigation Management for Diversified Cropping in Rice-Based Systems

**Objectives:** 1) To determine existing and potential irrigation management technologies for non-rice crops at the main system, tertiary, and farm-field levels; 2) to identify the technical, institutional, and economic constraints to diversified cropping in general, and to selected crops for each country or area in particular, under irrigated conditions, and to identify ways to relax such constraints; 3) to develop and field-test feasible practices which make the irrigation of selected non-rice crops more effective and profitable; and 4) to develop suitable extension methodology for wider application of field-tested viable alternatives.

**Start and Completion date:** January 1989 - December 1994

**Donor and Estimated cost:** Ministry of Agriculture, Forestry, and Fisheries (MAFF) Japan - US\$1 million

Programmes Division

48. Title: Irrigation System Performance Assessment

Objectives: To develop a conceptual framework and an associated methodology for assessing irrigation system performance, and to use this methodology to determine the performance of a cross-section of irrigation systems in Asia and Africa, thereby establishing the beginnings of a data base on irrigation performance.

Start and Completion date: 20 September 1992 - 19 September 1992  
(phase I: 9-19-90)

Donor and Estimated cost: Ford Foundation (phase I) - US\$1.327 M  
(phase I: US\$413,672)

#### Annex 4.1: Current Donor Support Group

IIMI derives the financial resources to pay for its activities principally from the members of a set of donors who have constituted a Support Group for this purpose. Currently the Group includes:

Aga Khan Foundation  
African Development Bank  
Asian Development Bank  
Australia  
Canada  
Federal Republic of Germany (BMZ)  
France  
Ford Foundation  
International Development Research Center  
International Fund for Agricultural Development  
Japan  
Netherlands  
Rockefeller Foundation  
United Kingdom  
United Nations Development Programme  
United States of America  
World Bank