

IIMI-SUDAN'S PROGRAM FOR NATIONAL CAPACITY BUILDING

by
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INTRODUCTION:

A Memorandum of Agreement (MOA) between the Government of Sudan and the International Irrigation Management Institute (IIMI) was signed on 2 February 1989. With the appointment of an internationally recruited staff as resident scientist, IIMI established its presence in Sudan by the middle of the year.

In order to develop a long term "demand-driven" program, a national policy workshop was organized in October 1989. The main purpose of this activity was to identify some important irrigation management issues that IIMI should address in close collaboration with relevant local agencies.

At next step, a consultative committee was established in early 1990. This multi-disciplinary committee represents most of the agencies responsible for the management of irrigated sector in Sudan. The consultative mechanism helps to chose, implement and evaluate annual activities on regular basis. Most often, the annual programs are based on the recommendations of the above stated national policy workshop.

Since the establishment of its office, IIMI-Sudan has made significant progress in organizing and conducting the activities as planned. Because of support provided to policy makers and field research conducted so far, many sudanese acknowledge that IIMI can expect profound impact in the coming years.

This paper describes the experience of IIMI-Sudan with respect to strengthening national capacity in Sudan: (i) of national irrigation management agencies in implementing policy management issues, identified by IIMI-Sudan. (ii) of national irrigation research institutes by planning, identifying and tackling the problems. First, the paper describes the context and conditions in which the program of IIMI-Sudan was developed. Second, there is a brief description of institutional linkages, established by IIMI-Sudan and the activities it has undertaken. Third, there is an account and assessment of the impact of the activities and realization of the significance of strengthening national capacities of irrigation management agencies and irrigation research institutions. Fourth, there is an analysis of the outcome and the conclusions based on the experience so far.

CONTEXT:

GENERAL: Sudan with an estimated area of 600 million feddans (2,503,890 square kilometers) is the largest country in Africa. About one-third of the total area, 200 million feddans, is classified as cultivable. At present, however, there 20 million feddans under agriculture of which 4.5 million are in the irrigated sector. It is worth noting that percentage of irrigated area to the total cultivable area in Sudan is only 2.25 as compared to 76 in Pakistan.

Sudan has a population of 25 million (est. 1990) and it is increasing at rate of about 3 %. About 89 percent of the population lives in rural areas and is primarily dependant on agriculture.

Sudan does possess vast agricultural resources, but, so far, it has been unable to exploit them for improving its deteriorated economy. Factors for this decline are as follows: the draught in 1983-84, 1989-90 and 1990-91; the civil war in the southern Sudan since 1980; and more significant is the mismanagement of economy. As the agriculture sector contributes about 40 % of Gross Domestic Product, provides more than 90% of foreign exchange earnings, accounts for 90% exports, and directly and indirectly furnishes 50% of Government's revenues, its pivotal role for a foreseeable future is likely to remain as the corner stone for development efforts.

Irrigation in Sudan: Total of irrigated area in Sudan is 1.9 million hectares which calculates to only about 22.5% of the total cultivated area of the country. The irrigated sector is dominated by four large parastatal schemes: Gezira, Khashm El Girba, Rahad and Es Suki consisting of 65.3% of total irrigated area. The Gezira system which has existed for over 65 years contains about a little less than half of the total irrigated area in Sudan and is crucial to the entire Sudanese economy. The three agricultural corporations viz. Northern, White & Blue Nile together share 16.8% and sugar public Ltd. Companies (excluding Kenana) 2.9% of the total irrigated area.

Irrigation Institutions: The Ministry of Irrigation (MOI) has a very important role in discharging the important functions of planning, development and utilization of water resources and formulating and enforcing irrigation regulations and laws. To-date ministry was only responsible for delivering water at heads of minor canals but by the end of this year it is going to extend its operations to heads of Abu Ishreens. The maintenance of main to minor canals plus other related infrastructure has been other major role of the agency. The schemes managed by the Northern Agricultural Production Corporation (NAPC) and Kenana Sugarcane Company are the only exceptions in this context.

So far, the agricultural corporations, parastatal agencies, have operated minor canal and on-farm irrigation system. By the end of current year, the responsibility for operating the minor canal will rest with MOI.

Irrigation Research Institutions: Like many developing countries, Sudan also has a strong tradition of agricultural research. Agricultural Research Corporation (ARC) and National Center for Research are such main agencies. However, some on-farm water management type research is conducted by ARC and NCR.

The Hydraulic Research Station is the research wing of MOI. Most of its activities are directed to siltation of reservoirs, hydraulic model-testing, and river related studies, etc. However, the unit has also contributed its efforts in estimation of crop water requirements and distribution of irrigation water along main and major canals in the Gezira Scheme.

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INSTITUTIONAL LINKAGES AND MODALITIES: IIMI's Consultative Committee in Sudan is chaired by B.E.F El Monshid, Under-Secretary, HRS, Ministry of Irrigation and has members representing the fields of irrigation, agriculture and agricultural engineering in the respective ministries and institutions. It is in the meeting of the Consultative Committee that the research agenda and priorities are discussed and the guidelines for IIMI's program of activities are generally decided.

IIMI-Sudan has developed a close relationship and collaboration with the Hydraulic Research Station of the Ministry of Irrigation(MOI) and with various field project authorities like Sudan Gezira Board, Rahad Agricultural Corporation, Northern Agricultural Production Corporation under an agreement signed between the IIMI and the MOI on behalf of the Sudan Government.

IIMI's collaborative research conducted in the Rahad Irrigation Scheme is discussed by the members of Rahad Research Coordination Committee at regular intervals. The members of the committee are nominated by RAC, MOI and Rahad Tenants Union. This arrangement is to remove bottle-necks if any and the members report back to their the top management of respective agencies. From next year, coordination role of this committee will become even more important as RAC and MOI take up full responsibility of the on-going research in Rahad. This group representing all three parties from the Rahad Scheme will also recommend future research activities to the Consultative Committee for approval.

FINANCES: In the past 3 years, most of the finances for the research activities were provided by IIMI from the grants of the Ford Foundation and African Development Bank. In future, 50% funding will come from IIMI's core funds.

ACTIVITIES:

IIMI-Sudan initiated its activities by organizing a national policy workshop in October 1989. The deliberations of this workshop identified important irrigation management issues to be addressed jointly with local agencies in the next five to ten years. IIMI's office in Sudan was established by the middle of 1989 and a Consultative Committee was formulated in the first quarter of 1990. The field research was conducted with the collaboration of the ministries of Irrigation and Agriculture. The staff who carried out these activities included one IIMI expert, Head Sudan Field Operations, other IIMI staff and the staff from the national organizations.

Currently the activities consist of the following field research and training operations:

1. *Irrigation Management Study in the Rahad Scheme.* In order to enhance the national capacity of relevant institutions by systematic research and to develop effective linkage with international irrigation community the project was undertaken at Rahad Irrigation Scheme with following objectives:

(i) to document the water indents, deliveries at the Minor Canal heads and Abu Ishreen at the head middle and tail sections of the Scheme; (ii) to document and understand the process by which water indents are determined by Rahad Agricultural Corporation, and delivery responses to the indents by the Ministry of Irrigation; (iii) to evaluate the equity of water delivery among Abu Ishreens in the selected Minors; and (iv) to document and understand water users' response to water delivery.

2. *Workshop on Privatization of irrigation Schemes in Sudan* was though not planned for 1991 but was held in response to a request from the Minister of Irrigation and a keen interest expressed by the Minister of Agriculture. IIMI-Sudan helped to organize this workshop. The objectives included (1) To identify and discuss policy options for the consideration of technical committee appointed to implement the government policy for privatization (2) To share with the Sudanese policy makers the experience of other countries and (3) To document national and international experience and international experience in the context of privatization.

3. *A training course in Rapid Rural Appraisal (RRA)* was arranged for 19 participants from SGB, Rahad Corporation, HRS, ARC and University of Gezira. At the end of this course, a seminar on RRA was delivered to the staff of the Ministry of Irrigation.

4. *Workshop on Irrigation Water Charges.* In order to fully understand the potential impact of increasing water rates, a workshop was organized in close cooperation with the Advisory Unit of Agricultural Corporations. The objectives of this workshop were: (i) to document and analyze the factors that determine the

irrigation water charges; (ii) to share the experience of other countries and current studies; and (iii) to identify policy options for Sudan.

5. *The Institution Building Activity.* IIMI provided services of a full time internationally recruited staff member to assist the Sudan Gezira Board for the following main objectives: (1) to provide advice on water management aspects of the experiments conducted at the Pilot Farm and on the Utilization and implementation of the results of the experiments, (2) to help establish a Water Management Advisory Unit within the Gezira Scheme. IIMI's Senior Water Management Advisor also assisted the Sudan Gezira Board on the following matters: (i) identification of factors influencing system performance; (ii) identification of constraints to low water efficiency; (iii) experimentation to quantify and evaluate performance parameters; and (iv) initiation of training programs.

One tour for mid-level management was organized in 1991 to study different irrigation management practices being followed in Bangladesh and Pakistan. An in-country training program for two weeks was executed during the current year for more than 2 dozen SGB officials. Two more training program will be undertaken before 31 October 1992.

6. *Seminars:* Five short duration seminars were organized in 1991 by IIMI to discuss the topics like Irrigation Service fees, Management perspective of operation and maintenance of irrigation systems studied in Sri Lanka, the Philippines and Morocco and Rapid Rural Appraisal techniques. In 1992, three seminars on the subjects of irrigation system performance and management turnover have been arranged at El Fau, Wad Medani and Kenana. During September, a seminar on "Planning Needs for the New Irrigation Schemes: Examples from Pakistan and Sri Lanka" is scheduled. This activity is expected to repeated at three locations in Sudan for the benefit of maximum number of officials of irrigated schemes.

7. *Technical assistance for Kenana Sugarcane Estate:* On the insistence of IIMI's Consultative Committee, IIMI agreed to provide limited technical assistance to Kenana Sugar Company. This help include most of the field work to be conducted by the staff of the Company on the advice of Head Sudan Field Operations. At present, technical assistance is directed to devise technical tools or innovation to decide when to cutoff irrigation water supply to minimize the tail water runoff. A significant progress has been made in this respect.

8. *GENERAL:* other activities included the submission of a review report entitled " Labor Situation in the Irrigated Sector of Sudan". The report resulted from IIMI's research support program for M.S student from the University of Gezira. Also, field support in 1991-92 was provided for two more Sudanese students for their M.S research programs. One of the student is studying in Cornell and is member of Agricultural Research Corporation, Wad Medani.

Second Student was selected from the Gezira University who is also member of the newly established Water Management Unit of SGB. At present, there are two more student conducting research with IIMI's help from the University of Khartoum. Assistance is also provided to Ministry of Irrigation in computerizing flow data of the Nile and tributaries in Sudan.

RESULTS OF STRENGTHENING NATIONAL CAPACITY

Strengthening National Capacity of Agencies in Irrigation Policy making and Management

Policy Making

IIMI Sudan does not want to claim any dramatic impact on policy making concerning the irrigated sector in Sudan. However, it would also be not fair to under estimate our contributions toward that goal. Mere repeated requests from different government sources for similar support from IIMI shows significance of our contributions made so far.

Pressures to recover the costs of irrigation service from water users is increasing in almost all countries having significant irrigated sector and Sudan is no exception. The primary internal source of this pressure is the increasing difficulty in financing system operations and maintenance from central government revenues. This pressure is augmented by the insistence of external lenders and donors for beneficiaries to pay greater share of costs aimed at achieving improved efficiency of water utilization.

On the request of Consultative Committee, IIMI collaborated with the Advisory Unit of Agricultural Corporation and last year in May we organized a successful workshop on *Land and Water Charges*. In the presence of two ministers, top level officials of MOI and MOA, and representatives of tenants; some innovative ideas for charging irrigation service were discussed. One of such ideas was presented by IIMI's representative which proposes to sell water at selected control points / Minor heads along Major Canals in the existing irrigation scheme. It is not surprising to hear now that the Government is planning to restrict its role to main canals and sell water at this level to farmers' associations or private companies.

Our second workshop on privatization of irrigation schemes in Sudan provided an excellent opportunity for thorough discussion on recently proclaimed policy of management turnover. As a result, a committee of four members was formed to prepare a set of recommendations based on the suggestions. This committee also included IIMI's resident scientist which shows the confidence of the Government in our sincere efforts. As follow up, recent requests to evaluate the on-going management turnover in the White Nile Pump Schemes and workshops to integrate entire activity in the country signifies the positive impact our previous efforts and potential for future contributions.

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The Rapid Rural Appraisal exercise was very much appreciated by the management of the Sudan Gezira Board and other agencies involved. It introduced the participants to new methods of information gathering which are more practical, time-saving and cost effective.

Management

The results of the field research conducted in the field of irrigation management over the last three years have brought much better appreciation of the reality and significance of improvements and efficiency in the management of irrigation systems. Certain management related issues have been identified for further investigations are in progress.

After only three years, one should not expect momentous changes in the ingrained irrigation management practices. However, there is no more insistence of being always "right" and research findings are "wrong." This is good sign for change.

In schemes where IIMI is collaborating with local agencies, there is a strong desire to implement certain ideas for improving their management practices. For example, the ministry of irrigation has started constructing flumes in the drains of Rahad Scheme to monitor tail-water runoff from the irrigation system. According to design, the surface drainage system is only for the disposal of rain water. On the ground, reality is different. Similarly, the management of Rahad Agricultural Corporation is anxious to learn monitoring canal supplies against their request amount of water along delivery canals. Short training sessions have already been implemented and more to come. Definitely, such monitoring efforts are encouraging indicators of impact.

In the Kenana Scheme, about 89% of area receive irrigation water from the White Nile which is pumped three to four times. However, the tail water runoff is so "dependable" that farmers at the periphery of the project have grown gardens along the surface drains. The Management of Kenana is keen to minimize such loss to the project which amounts from 30 to 50% of pumped water. With IIMI's technical assistance, some technical and management tools have been either proposed or being tested for improving irrigation practices aimed at minimizing the runoff.

Strengthening National Capacity in Research on Irrigation Management

At present, the Hydraulic Research Station / MOI and officials of Rahad Agricultural Corporation have partially been involved in conducting research on irrigation management. In order to improve the research capacity of the agencies in the desired field, such level of participation is too modest. However, after establishing its credibility with cooperating agencies which essential at the beginning, IIMI has planned future research to be entirely conducted by the concerned local parties. IIMI is assuming the role

of a coordinator and to provide necessary technical assistance if required.

With the existing level of program in Sudan, it has been a difficult job to involve many other important agencies. For example, collaboration with ARC should be a valuable option, but this did not go beyond one report preparation. In my opinion, collaboration with ARC should go a long way in strengthening national capacity for research on irrigation management. In future planning, IIMI needs to keep this option in mind.

Partial support to-date for HRS/MOI and RAC for research in the desired field is not enough to achieve the objective. However, with the proposed mode of operation, a significant contribution can be expected in future.

CONCLUSIONS

In April 1992, a combined mission sponsored by the Ford Foundation and IIMI visited Sudan. Its main objectives was to evaluate IIMI's "demand" in Sudan. The members were satisfied to find that there was general positive feeling at different levels of MOI and MOA toward IIMI's support for conducting research on irrigation management and effective contribution toward policy making about the management of irrigated agriculture.

With time, we hope that our program in Sudan will generate enough information to impact upon capacity building process regarding policy making, management and research on irrigation management. So far, there is not too much to report and / or to brag about. At the same time, as the stated achievements are significant, there is real potential for a profound impact of IIMI's contributions toward irrigation management in this country. This not an overstatement under the current circumstances when changes in the irrigated sector of Sudan are occurring at "supersonic" speed and there is no other international agency except IIMI to assist.