IPTRID is working as an "architect", to three main production lines: water management and capacity development, formulation, and assistance for beneficiaries. The enhancement of research capacity, formulation, and assistance for beneficiaries. The vision of capacity development. This is seen as a necessity in IPTRID's concept of capacity development. This is seen as an integrated concept that embraces applied research training, demonstration, technology transfer, participation, empowerment, legislation and institutional development. IPTRID is broadening its scope from irrigation and drainage to all aspects of agricultural water management - such as drainage of non-irrigated land, flood control, watershed management, and water resources management. Modernization of existing irrigation schemes and development of smallholder/medium-scale irrigation remain priority issues.

**Production lines**

1. Support for strategies
   - Countries assisted in formulating sustainable agricultural water management strategies at regional, national, and sub-national levels:
     - Identification of capacity development needs for improving the use and management of water in agriculture.
     - Formulation of up-to-date and sustainable agricultural water management strategies (within the scope of integrated water resources management and poverty reduction strategies).

2. Support for projects
   - Countries assisted in the preparation of:
     - Effective capacity building programmes and projects, and
     - Arranging funding (by bilateral and multilateral development aid).
   - Project identification reports
   - Project formulation reports
   - Funding facility

3. Communication and advocacy
   - Information provision, and Awareness creation, on agricultural water management issues.

**Building blocks**

1. Needs for capacity development
   - Assessment studies and action research
   - Workshops
   - Strategies and programme documents

2. Project identification reports
   - Project formulation reports
   - Funding facility

3. Integrated Information System
   - Periodical publications
   - Promotional documents

The system is fully functioning, and has had established monitoring procedures that would allow scheme improvements to be reliably documented. In terms of the financial sustainability of irrigation systems, the modernization process was generally found to be highly subsidized, - given that the high costs of investment and the low payment capacity of farmers. Such subsidies were justified by respective governments generally in terms of the rural development objectives associated with irrigation projects. However, no modernization projects had provision for maintenance by either governments or users, despite the large investment made. This considerably threatens the sustainability of the achievements made.

Finally, most of the modernization processes studied were part of national water policy reforms. Such reforms were sectional in nature even when their driving force was high water scarcity. There seemed to be a lack of coherence between the different issues that have to be addressed - food security, water scarcity and increased urban, domestic, industrial use of water. Most of the modernization processes focused much more on ensuring water supply than on managing demand. More comprehensive approaches may be necessary, as water conservation and demand management are essential for the sustainability of water resources and the environment, as well as economic efficiency and social development. It is particularly true for governments in multi-national catchment systems where there is potential for conflicting water needs – e.g. for the Jordan, Ganges and Nile rivers.

Further details

The paper can presently be examined through the USDA (see www3.pvci.usda.gov/-uscid/uscid_pb.html for details). A joint IPTRID/FAO publication, with a complete analysis of the case studies, will be produced in 2004.

Irrigation modernization is increasingly seen as an important part of improving the effectiveness and efficiency of water resources management in the agriculture sector. There is a strong need to include training and capacity building in irrigation management initiatives so that the ability of irrigation professionals to introduce and deliver the needed modernization measures is enhanced. This conclusion has been reached in a number of studies, including those by FAO, The World Bank, UNDP, ICID and IPTRID.

IPTRID has been carrying out a worldwide survey of Capacity Building Programmes on Irrigation Modernization, and since 2002 it has collected information from more than 75 institutions/organizations all over the world. The results of this questionnaire survey have been compiled in a database with web-based format. Thus IPTRID is able to provide online information about irrigation modernization opportunities.

**Cb-inventory**

The inventory provides information on more than 200 activities on capacity building for irrigation modernization, e.g. classroom field-based courses, distance learning, workshops/seminars, virtual networking, exchange programmes, etc. The objectives are:

- to help find programmes on building capacity for irrigation modernization worldwide
- to provide relevant information about the programme - content, duration, target groups, etc.
- to enable host organizations to inform interested applicants and a wide audience about their programmes.

The Clivem宣言 can be consulted at the web address: http://www.fao.org/iptrid/clevem宣言.html Additional information about the Inventory may be requested from the IPTRID Secretariat at iptrid@fao.org.

**Capacity Building:**

"Capacity building is the sum of efforts to nurture, enhance, and utilize the skills and capacities of people at all levels - local, national, regional, and international - so that they can better progress towards sustainable development. At the basic conceptual level, building capacity involves empowering people and organizations to solve their problems rather than attempting to fix those problems directly.

When capacity building is successful, the result is more effective people and institutions better able to provide products and services on a sustainable basis." UNDP, 1998.

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**IPTRID news**

**WCA infoNET - current situation**

Michael Salben
IPTRID's WCA infoNET information system is an Internet-based integrated information platform which merges high-quality information resources and expertise on water conservation in agriculture. It allows direct access to publications, documents, data, computer programs and discussion groups.

The system is fully functioning, and has 20 honorary editors, 2 researchers, regular inputs from major IPTRID partners and the services of a programmer working on maintenance and quality enhancement. It was recently upgraded with enhanced features and more stability. A new look design for the web-site that matches other IPTRID/FAO publications has been released soon, as well as a "library" version of WCA infoNET on CD-ROM. The amount of information stored on the system has increased by nearly 25% over the last three months. Most of the KO's (Knowledge Objects) are owned by the system, i.e., they are held on its server instead of being reached by a link to an external server.

WCA infoNET can be accessed as usual by its URL: http://www.wca-infonet.org.

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**Cb-inventory – IPTRID's inventory of capacity building programmes for irrigation modernization**

**WCA infoNET**

This publication containing full explanation of the Programme, can be requested from IPTRID.
Many irrigation schemes worldwide suffer from poor management, both in technical and social dimensions. This often leads to unsustainable practices, decaying infrastructure and reluctance by users to contribute to maintenance of their schemes. Many irrigation schemes are caught in downward cycles of poor maintenance, poor water delivery performance, diminishing agricultural productivity and declining profits.

The gap between expected and actual performance has led different countries to undertake various types of interventions:
- technical and managerial improvements at different levels (farm, scheme, and watershed)
- institutional reform through the restructuring of irrigation agencies (such as the transfer of irrigation management to farmers’ associations and/or private enterprises).

Experience shows that if these different interventions are not carried out in coordination with each other, they will not produce the expected results (Plusquellec, 2002).

A critical aspect that hinders the transfer of management responsibility to farmers from Government, is their unwillingness to accept schemes that have deteriorated technically until it has been upgraded. Similarly, the introduction of new schemes, or the upgrading of existing technologies, often results in failures unless there is:
- provision for adequate training,
- adequate maintenance carried out,
- adequate longer term cost-benefit analyses,
- adequate legal and policy environments.

The concept of modernization of irrigation schemes gives rise to many interpretations, which demonstrate various levels of sophistication dependent on the different perspectives and experienced situations of water users and other stakeholders involved. For its work, IPTRID took the following definition of modernization as its reference.

**Modernisation**

“Process of technical and managerial upgrading of irrigation schemes combined with institutional reforms, if required, with the objective to improve resource utilization (labor, water, economic, environmental) and water delivery service to farms” (FAO, 1997).

Survey on selected cases of irrigation modernization

In close collaboration with FAO, IPTRID is surveying current modernization processes taking place on irrigation schemes around the world (ranging from 400 to 50 000 hectares). Twenty case studies have been initiated.

The main objective of the survey is to obtain a worldwide overview of the modernization process and its components. Terms of reference (prepared in English, French and Spanish) have been disseminated widely to national and local institutions in order to encourage them to undertake case studies. The aspects addressed comprise:
- description of the irrigation system before and after modernization
- reasons for modernization
- interventions in modernization
- impacts of modernization
- conclusions, comments, suggestions and recommendations.

The survey is helping to identify the different meanings and purposes associated with modernization, the different levels of priority given to technical and managerial interventions, and the different national strategies and constraints associated with irrigation deve-

Modernisation in North and West Africa – selected cases

Based on survey information from North and West Africa (Egypt, Jordan, Mali, Senegal and Syria), IPTRID provided a scientific paper at the Second USBIC International Conference on Irrigation and Drainage (Water for a Sustainable World — Limited Supplies and Expanding Demand), Phnom Penh, Cambodia, May 2003.

Case studies demonstrate the significance of modernization processes for the modernization program have been analyzed, as well as impacts on water service performances. The study showed that water resource shortage is an important cause leading to system modernization, but not the only one. Even when the potential water supply is not limited, institutional shortcomings and low crop economic productivity are also problems for which the modernization process is seen as a solution.

The modernization interventions investigated by IPTRID comprised technical improvements at on-farm, system and watershed levels, coupled in some cases, with institutional reforms such as user organizations. Capacity building actions accompanied these changes but were mostly at too low a level. The study found that if technical improvement and management transfer were implemented without adequate capacity building across the different management levels involved, the sustainability of the return on the investment (both financial and human) was limited. Capacity building is needed in order to enable technical staff and managers with the new skills and tools modernization requires.

Evidence shows that in all cases modernization brought improvements in water delivery efficiencies and water supply reliability. In most cases, these technical changes led to beneficial changes in water management service (flexibility, reliability, equity).

The irrigation challenge

IPTRID Issue Paper No. 4

This paper written by Hervé Plusquellec, recently published by IPTRID, discusses the significance of increased contribution of irrigated agriculture to food and fibre production, despite the lower level of investment available for construction and modernization of schemes. It argues that the food production shortages projected for the 1990s have been averted because of the expansion in ground water use and the improvements in water application efficiency over the last 30 years. However, overexploitation of ground-water and degradation of quality have been occurring in many parts of the world, particularly in semi-arid and arid regions. This paper suggests that we have to pay more attention to addressing the long-standing issue of poor management practices in large irrigation systems. It argues that business-as-usual is no longer an option, and management practices as well as research design, must change to better serve the communities that depend on irrigated agriculture.

The irrigation challenge – changing irrigation contribution to food security through higher water productivity from canal irrigation systems (1950-2000). Available on request from the IPTRID Secretariat.