

* **FMIS Rehabilitation: A Moroccan Perspective**

This article makes a number of observations on the problems associated with rehabilitating FMISs and concludes with a few principles to guide research in this field. "Rehabilitation" includes not only irrigation structures and canal networks, crops, and farming practices, but also the condition of the command area. The category of irrigation systems known in Morocco as PMHs (perimètres de petite et moyenne hydraulique) refers to systems of relatively modest dimensions that are wholly or partially managed by the irrigators themselves. The term "FMIS" is used, in this article, in place of PMH.

Interest in Rehabilitating FMIS

FMISs, as opposed to their large-scale counterparts, are attracting increasing attention from agencies, financing institutions, and researchers in Morocco for many reasons:

- Disappointing results from large-scale systems. There is a general perception that FMIS can be made profitable more rapidly because farmers are already experienced in irrigation.
- The relative importance of the FMIS sector in terms of land area and population serviced. In Morocco, FMISs have a service potential of 700,000 ha, or roughly 50% of all irrigable land.
- A concern to allocate government investment more effectively among the regions so as to curb migration from disadvantaged rural areas to cities and towns.
- The size of FMIS command areas make it possible to phase investments better and avoid the time lag

often seen in new large-scale irrigation projects. More rapid phasing can improve the return obtained on the investments.

While the heightened interest in FMIS is broadly justified, some of the assumptions are very debatable. For instance, there is little evidence that the per-hectare cost of FMIS rehabilitation is always low; it is essential to know what degree of rehabilitation was intended. No conclusions can be applied across the board: each irrigation system must be treated as a particular case.

Rehabilitation is a complex business

One of the most significant difficulties in FMIS rehabilitation involves the lack of information. Because of the dispersed nature of FMISs, collecting necessary data can be time consuming and very costly. Other difficulties include the following:

- Land tenure arrangements and water rights are often difficult to evaluate and very complex.
- Irrigation networks often appear inefficient, with winding canals and rudimentary structures. Here the challenge is to come up with a technology that is consistent with farmers' needs and their ability to operate and maintain the structures proposed.
- Inappropriate laws and regulations. The drafting, adoption and implementation of new legal and regulatory texts require considerable time and effort.
- Government organizations set up to oversee irrigation systems are often unable to adapt to a changing environment. This means difficulties in reaching agreements between the agency responsible for a rehabilitation project and the farmers it targets.

- Engineers are trained in designing new irrigation systems not rehabilitating FMISs. Researchers in the social sciences, finding how highly adapted farmers are to prevailing natural, technological, social and economic conditions, are inclined to conclude that the existing farmer organization is doing a good job and to advise against a rehabilitation that modifies the status quo to any appreciable degree. On the other hand, the engineer, because of his training, is often likely to conclude that the existing system performs very poorly and needs to be totally recast.

A fundamental consideration for an engineer on an irrigation rehabilitation project is the extent to which he is going to have to modify the existing situation. Will he be limited to superficial changes so that the status quo is basically maintained as far as the allocation of system benefits is concerned? Or should he carry the logic of the rehabilitation through to the end by setting up a rational administration system based on purely technical and economic criteria and which, from a certain standpoint, guarantees a more equitable distribution of the benefits associated with the rehabilitation?

In the face of constraints, there is always a temptation to limit the project to a minimum (lining of canals and restoration of existing structures) -- in other words, to repair, but not to modernize. When system administration is not taken into account during the design process, the resulting projects lack internal consistency and are of doubtful cost-effectiveness, even if they do have some favorable social effects.

When the attempt is made to modify existing rights (by repurchasing and redistributing them, for instance), those who formerly enjoyed advantages

are likely to be discontented. However, when existing rights are not modified, so that the project benefits each farmer in proportion to his former position, the farmers who were less well placed are going to feel they have suffered and are likely to oppose the project because it only reinforces-- and in more durable form -- an inequitable situation they had always hoped to see remedied.

Research Implications

More research is clearly necessary, but in what direction? Should it be an examination of the past record of government measures focused on FMISs and an analysis of the reasons for failures and successes? Should it take the form of a study of the responsible agencies and of the legal and political context within which they work, with a view to pinpointing their possible weaknesses and proposing more suitable structures? Or should a number of existing FMISs be studied and their performance evaluated -- with attention paid to irrigation structures and conduit systems, production practices, administration arrangements, etc.? Three general principles can guide our research efforts:

- Research should be multi-disciplinary, carried out by specialists in the social sciences as well as by engineers. Its multi-disciplinary nature should not only be a question of the mix of actual disciplines but also of looking at responsible agencies on various levels. University faculty, government decision-makers, and engineers should participate together in the research effort.
- The research should generate practical methodologies that will enable rehabilitation planners to be more effective in defining priorities and designing workable action programs.

- Management of irrigation facilities must be a central concern in all research on rehabilitating FMISs. No rehabilitation project can be successful without the cooperation of the farmers affected by it. One major research goal in the sphere of small- and medium-scale irrigation should therefore be to gain a better understanding of the factors that are likely to favor, or undermine, development of a dynamic and sustainable system for the collective management of irrigation equipment and facilities.

Conclusion

Rehabilitating FMISs poses problems quite different from those faced in creating new systems. Their complexity has so far prevented research efforts from generating a full-scale methodology to guide rehabilitation planners. In the case of Morocco, there is an urgent need for research scientists, university specialists, and engineers attached to government agencies responsible for irrigation rehabilitation projects to pool their experience and coordinate their investigations so that this gap can be bridged.

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