

Irrigation Research Possibilities in Sri Lanka

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It remains a curious fact that irrigation as a subject of research has received scant attention from social scientists. It is true enough that aspects either related or incidental to irrigation such as land use and settlement have been researched; but irrigation *per se* as a subject of research has not received the attention that it deserves. It should, however, be noted that this situation is not peculiar to Sri Lanka. Since the distribution, allocation and utilization of irrigation water have both social and economic implications it is necessary that the social scientists actively engage themselves in irrigation research with a view to filling the existing lacunae. It is only thus that a more pragmatic approach to irrigation development can be found.

Traditional Irrigation Institutions

The term traditional irrigation institutions is used here in a very broad sense to cover both the institutional and organizational aspects. There exist in Sri Lanka traditional systems of irrigation which contrast with the primarily State-sponsored larger irrigational systems of more recent times. These systems are controlled and regulated by traditional institutions which are of course subject to evolutionary change and modification. There is a real need for a critical study of these institutions based on empirical research, particularly with a view to their selective transferability to new situations. Coward's study of the indigenous irrigation bureaucracy in Thailand points at possible lines of investigation. Presumably, the study of traditional irrigation institutions will also provide the necessary data for evolving theoretical models for the comparison and evaluation of traditional irrigation systems, which in turn will be crucial in improving their levels of efficiency. Leach's classic study of Pul-Eliya illustrates the complex institutional arrangements relating to water rights in a *wewa* (tank) based irrigation system in the Northern Dry Zone of Sri Lanka. However, there is a need for more information on traditional water rights and irrigation

practices. Such information should not only relate to the *wewa* based systems, but also to the flow-irrigated systems based on both perennial and non-perennial river systems. It is equally important to study the traditional institutional arrangements relating to lift irrigation.

There is also the situation in which the traditional institutions operate in an organizational vacuum, largely because of the failure of village-level organizations to whom has been delegated the responsibility of managing irrigation. Therefore, there is the danger of traditional irrigation institutions losing their viability in a rapidly changing social context. How could the process be contained or, more positively, be given re-direction? The answers to these problems may lie in a careful and discerning analysis of the traditional institutions of irrigation.

Operation and Management of Irrigation

There is much scope for research on the operational and managerial aspects of irrigation. In Sri Lanka this is almost an untrodden field by social scientists. There is evidence to suggest that in canal based irrigation there are numerous constraints placed on efficient operation and management. A fundamental difficulty arises when a canal system is unable to provide a dependable supply of water to the irrigators. A dependable water supply should ensure the availability of irrigation water in the right quantities, at the right time and at the right place. There may also be situations in which irrigation water, though available is not equitably distributed through the entirety of the canal system, thereby creating problems of inequity between top-enders and tail-enders. Further, it is possible that among both top and tail-enders, those located closer to the source of water supply (i.e. the main or the distributory canals) derive more advantages resulting in inequities both within and between groups. Irrigation water may be misappropriated and in general not efficiently used. The

permissiveness in water use has been identified as a major constraint on improved management practices in irrigation. Some of the above problems necessarily arise due to faulty designing and bad maintenance of irrigation systems; but there are others which are more directly related to the human factor, whether at the level of the bureaucracy or of the local community. In minor irrigation typified by the *wewa* based communities of the Northern Dry Zone, elaborate institutional arrangements have been devised to eliminate inequity in access to water and the maintenance of irrigation systems. However, in recent times the functional viability of such systems have been threatened by the failure of village-level institutions such as the Cultivation Committees. Hence the need for social science research on the operational and managerial aspects of irrigation.

Irrigation Bureaucracy

Simply stated there is the need to study the manner in which the irrigation bureaucracy operates. Thus it is useful to study the patterns of interaction between the irrigation bureaucracy and the irrigators; the relationship between the elitist and non-elitist groups within the bureaucracy may have direct implications for the way in which it performs. Not too infrequently there is the tendency on the part of the irrigation bureaucracy to ascribe the failure of irrigation systems to external factors; but it is worth examining the extent to which problems internal to the system account for such failures. There is also the need to investigate the efficiency of field-level operations of irrigation staff with a view to identifying the practical difficulties involved.

Water Management

The non-availability of a reliable water supply has been identified as a major problem in existing irrigation settlements. Further, there is the need to discover non-zero sum (i.e. the means by which the supply of water to the tail-end can be improved without top-enders becoming worse-off) solutions to the problems of water management. There is a need for similar studies to test the validity and practicality of the proposed strategies for management. It is suggested here that in-

depth studies of water management in relation to specific irrigation systems will prove to be important in policy formulation. It is equally important to study water management situations with special reference to levels of performance under traditional systems of irrigation. It is, for example, interesting to study the impact of the provisions of the Irrigation Ordinance on the level of performance of village irrigation systems.

Irrigation Communities

There is much scope for research on irrigation communities. An area that needs immediate attention is the type of irrigation associations necessary to organize the irrigators into cohesive groups. The absence of functional irrigation groups at the community-level is an observable weakness in the operation and management of irrigation systems in Sri Lanka. In regard to irrigation associations several basic problems should be carefully researched. The means of strengthening the participatory role of farmers in the decision-making process is obviously an area for investigation. How is it possible to strengthen the bargaining position of the local groups vis-a-vis the irrigation bureaucracy? How should the leadership roles be articulated within such groups? Where should it be to the bureaucracy or to the local community? In what manner and to what degree should new leadership roles relate to existing patterns of authority at the village level? How relevant are the now defunct roles of irrigation headmen and irrigation agents as models for the formulation of new type of institutional leadership? It will, of course, be necessary to carefully research the constitution of irrigation associations. A vital need in this area is to strengthen tail-end representation in such organizations. Is the answer to be found in "political engineering" as suggested by Chambers? An interesting experiment in farmers organizations is being attempted in the Mahaveli development area.

Irrigation Politics

Irrigation is very much the stuff of politicians and it is important to research the impact of politics on the operation and management of irrigation. The fact that all too frequently politics exert a negative impact on

irrigation management is well known, Moore refers to the "siege mentality" afflicting, the irrigation bureaucracy due to frequent and unwarranted political intervention in irrigation administration. This is especially important at a time when in Sri Lanka decentralization of administration results in a greater devolution of authority on District Councils, thus necessitating closer inter-action between politicians, the irrigation bureaucracies and the community of irrigators.

Irrigation Economics

At the micro-level the returns versus costs for alternative water management / cropping systems may be analysed to ascertain economic efficiencies of irrigation. The short term versus long term cost benefit analysis of alternative supply systems, e.g. between flow irrigated and lift irrigated agriculture, indicates another possible line of investigation. Another area of importance is the study of the distribution of irrigation benefits. Irrigation development should be concerned with the equitable distribution of benefits within the community. If inequities exist, how could equity be achieved? In such situations it is worth investigating whether market solutions are possible to reconcile differences. The relationship between improved irrigation practices and productivity is another potential area of research. The labour absorptive function of improved water management practices is another area worth investigating. There is also the need to arrive at objective criteria to determine water pricing policies.

Conclusion

The paucity of research of the type outlined above undeniably constrains the efforts to improve the efficiency of irrigation water use. It is in this sense that irrigation research offers a challenge to the social sciences. It is however, worth noting that the research possibilities outlined above are not the exclusive domain of any particular field within the social sciences. Interdisciplinary approaches by researchers within the social sciences are bound to be highly productive in irrigation research; and indeed there lies much scope for social scientists to initiate collaboration with researchers outside the field of social sciences.