

IMPACT OF NATURAL RESOURCES MANAGEMENT RESEARCH¹
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WHAT IS IMPACT?

Impact is the observable effect of some action (or some natural occurrence) on those people or things, that are subjected to that action (or that occurrence). "The speech had a tremendous impact on the audience". The most important aspect of an impact in this instance is that it has to be assessed or measured, not through the efforts of the speaker, but through the behavioral changes of those who listen to the speech. Speaker's efforts are important in effecting the changes.

Some actions evoke a prompt response from the subjects, whereas, others take some time to generate an effect. Research usually take considerable time for impact.

UPTAKE AND IMPACT

The International Journal of Water Resources Development had a special issue in March 1995, dedicated to irrigation management, its definition, analysis and impact. In its introductory article, the guest editor predicted that irrigation management research would persist in its central task of exerting pressure on irrigation development agencies to reform, and that, "if the right alliances could be forged", important advances would be seen in the way many developing countries manage their water (Bottrall, 1995).

Another similar review of twenty-one UK-supported research projects on renewable natural resources highlighted the importance of "uptake" and "impact" of research (Edwards and Farrington, 1993). In this instance, the reviewers' conclusions implied that the uptake by end users of research, and its final impact, were essentially the intended targets of the research process, while the uptake by the intermediate users was also to be recognized as useful. They found "weaknesses in several aspects of the downstream spectrum of activities between researchers and intended users", and identified a need to re-define the currently accepted mandates of researchers to allow them to move "downstream" for reaching the end users more effectively.

Combining the two view points in the context of current experience in natural resources management research, a suggestion can be made that, for researchers to achieve an impact of their work, they should necessarily be concerned about how the research results are absorbed by the intended users. The increasing pressure on policy makers and natural resources management agencies to reform will have a greater chance of success if the research recommendations for reform are accompanied by some action research initiatives to implement them.

END USERS AND INTERMEDIATE USERS

The intended end users of natural resources management research are usually the farmers, as well as the government policy makers and agencies. In some instances, the NGOs may also be in this category. The end users in this instance are those who apply research outputs (technologies, changed institutional processes and new knowledge) directly in their resources management activities, without further modification. By this definitional implication, if a resources management research center were to focus only on strategic research, generating knowledge to be used by others in the development of technologies and institutional reforms, they may have little opportunity in interacting with the end users directly, and its chances of ensuring any impact of its efforts are rather limited.

The intermediate users of the outputs of an international resources management research center are usually the other research groups, particularly those in the national agriculture research systems (NARS), NGOs, or local agency staff, who further modify the research results for developing widely applicable technologies (applied research), or for applying the knowledge or technology to specific field conditions (adaptive research). In both applied, as well as adaptive research, original research results are modified further before some recommendations are developed and passed on to the end users.

In any case, it is important that the users are identified in the research design itself. With this early identification, the process of research can be monitored to provide the maximum benefit for the intended users, rather than carry out the motions of research for the sake of doing research.

FAILURE IN UPTAKING RESEARCH

In many developing countries the diffusion and uptake of farming systems technology has not been as difficult as the introduction of management technology in organizations related to irrigated agriculture. The transfer of green revolution technologies occurred fairly quickly. The use of farm equipment, improved seed varieties, fertilizer and other inputs has had rapid acceptance. An excellent example of fast technology diffusion is the advent of groundwater development in Pakistan. The technology has rapidly moved ahead with such a sudden outburst of private sector interest that privately secured water now meets over 40% of the Punjab Province's overall consumption needs.

Thus, while the farmers have responded well to the market changes by adopting most of the technologies made available to them, the institutional response to market changes has been conspicuously slow and lacking. For instance, it has been very difficult for agency staff to accept the modern water distribution methods aimed at being more responsive to crop requirements. Information handling both within offices, as well as between agency staff and farmers, continues to be carried out in very unproductive ways. Agency-farmer relationships are still dictated by traditional social values that represent the old feudal systems rather than modern democratic methods. All in all, resistance to change has been greater and more deep-rooted among the officials than among the so called "illiterate" farmers.

Lack of Catalytic Influence

The main reason for this discrepancy can be traced to an absence of a catalytic process in institutional development. The research and extension package in agriculture production is seen to be far superior to what has ever been attempted in improving the management and institutional conditions. Evidently, the promotional effort associated with this package came mainly from the market itself, the suppliers of inputs and the buyers of farm produce, who had a vested interest in such promotional activity. This catalyst was not present in the context of management and institutional improvement.

Lack of Motivation for Realizing Impact

The objectives of uptake and impact are generally inherent in any research activity. In the realization of these objectives, however, the researchers can play, either a passive role, or an active role, depending on their mission. For example, a chemist researching on a drug may not be interested in actively pursuing the application of his research results, whereas, a doctor's primary objective in carrying out investigations on a patient's condition is to use these results in treating the patient. A medical researcher working for a pharmaceutical company may have a choice, to leave the research results in the hands of the intermediate users, or in pursuing them further with the uptake by the end users.

This choice, however, does not seem to exist for those involved in impact seeking research. As resources management research is essentially targeted on performance improvement, and as the ultimate beneficiaries of improved resources management performance in developing countries are the rural poor (such as farmers, tenants, landless people, and hired and migrant labor), the strategy should necessarily include measures to promote the uptake of its research by the end users so that there will be some tangible impact arising from its efforts. For this essentially collaborative approach towards
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effective uptaking process, the research groups have to explore whether the existing institutions can cope with the required changes that research may identify for management improvement. Thus, institutional development becomes an essential companion to natural resources management research.

A FOUR-POINT METHODOLOGY FOR IMPACT REALIZATION

In a continuum of activities related to research and development, an appropriate methodology for developing institutions, and thereby realizing impact of research, can be described as having four progressive steps applicable to each activity:

1. **Consultation** - information sharing between the research center and its advisors, partners, clients, beneficiaries, and evaluators to identify problems and develop solutions;
2. **Collaboration** - cooperation with government development agencies and research institutes, NGOs, and local expert groups in jointly carrying out activities for identifying problems and developing solutions;
3. **Correction** - promoting corrective action within existing institutional arrangements, based on agreed solutions to identified institutional constraints, and in consultation and collaboration with concerned individuals, groups and authorities; and
4. **Consolidation** - assisting in the internalization of institutional improvements effected through consultation, collaboration and corrective measures.

Consultation

The key to institutional development and impact-oriented research is the consultative process whereby the researcher, the change agent and the policy maker enter into a plane of mutual understanding regarding what needs to be changed. The methods employed include both formal and informal approaches, and a combination of both is considered most effective. In hierarchical societies of developing countries where a preference towards formalism exists, the consultation through formal mechanisms is seen to be a productive method for more stable collaborative relationships. A number of informal arrangements for detailed micro-level discussions can enhance the process. The deliberations in formal mechanisms can be supplemented by regular consultation with key persons of the local research community as well as those in policy and implementation levels of government agencies.

One of the most effective ways of using consultation for collaborative work is to establish Working Groups for specific functions or components of the work program. Their proximity to the actual work environment and their persistent and regular involvement in consultation efforts are essential to make them productive. Similarly, Planning Groups at the policy level can be effective if they function regularly. Both these methods are useful when they take a semi-formal stance.

Training and Extension: A discussion on Consultation seems incomplete without reference to the traditionally known methods of consultation related to the dissemination of research results. A collaborative program can benefit from a greater involvement not only in training, but also in some extension work associated with it. A combination of both types of interventions seems necessary, particularly in areas of social organization and farmers' irrigation and agricultural practices.

Information and Technology Transfer to Farmers: Often, the field research personnel confront an increasing demand by the farmers for technical information as they continue to work in the rural areas.

This growing demand is linked with the widening gap in responsiveness to market changes between the farmers and the officials providing support services. Although research organizations try to stay away from this mounting pressure, those involved in adaptive research and institutional development activities have to find a strategy to meet this demand in some way or the other. Usually, the farmers' demand is linked with problem solving technical recommendations. The strength of collaboration with local partners (the respective experts in various technical fields) will be tested by the success of how this demand can be met in the field.

"Meet the Farmer" Field Days: Preferably in collaboration with the concerned government development agencies, the research organizations can play an active role in meeting the farmers for an exchange of technical information. A regular Field Day in the project areas is a useful mechanism to promote direct interactions with (and among) the farmers. Sharing of field and related technical information through a local language "research bulletin" will supplement this direct interaction process. These measures will also help to promote long-term collaborative relationships between research and development agencies.

Collaboration

International and national research centers frequently refer in their strategy documents to "collaborative research". This reference relates to one of the essential features of a resources management improvement program, which is the fact that the research activities have to be mostly conducted in "living laboratories" of resources management systems consisting of agencies, agency staff, other organizations, their members, farmers, and farmers' fields. Collaboration provides easy access to these systems. It is also linked with "correction", the next step in the institutional development strategy. Once the problems are identified and the solutions are developed through collaborative efforts, a stronger collaboration becomes necessary to effect the corrective measures; invariably, this collaboration should be with those concerned with the institutions to be strengthened.

Formal Mechanisms: The methodology gainfully adopted for collaboration is to use the preliminary consultations as a preparation for mutual understanding, usually followed by formal agreements and cooperative working arrangements with selected national agencies and institutes. Within five to six years, IIMI in Pakistan entered into about ten such memoranda of understanding or agreements for a number of purposes, such as data collection, data analysis, research design, and professional development (Kijne and Levine, 1991). Not all of them were able to produce the intended results, but on the average, the MOUs have helped to formalize stable collaborative relationships between IIMI and its working partners. In some instances, IIMI was able to embark on some very effective collaboration through these formal agreements for data collection and analysis.

However, the formal collaborative relationships often have a tendency to become mere financial or contractual arrangements, thus negating the real meaning of collaboration. In this sense, informal arrangements have proved to be more meaningful and sustainable as collaborative efforts. Collaboration does not end in signing an MOU and assigning a task to the collaborator, but needs to be pursued as a continuing relationship built on a common goal.

Interest for Collaboration: For collaboration to be effective, it essentially needs to be a meeting of minds and a confluence of interests. The interest within the whole organization and backed by its rules system, unhindered by any individual dissent or any procedural snag, is more likely to support genuine collaboration than the (vested) interest of a few selected individuals in the organization. The latter approach is not without merit when a project needs some contact persons in a collaborating organization to develop real collaborative relationships, but the international centers cannot rely entirely on such individual gestures for its long-term success in collaboration. However, mobilizing organized groups who share a common interest and are willing to work together can be an effective strategy for collaboration.

Content of Collaboration: The scope of collaboration in the context of institutional development can vary according to the activities undertaken. Here, to mention collaboration of two types is in order. One is the collaboration between the international research center and a local research group, working together to diagnose the problems, find solutions and apply them in a third institutional set-up that is to be

strengthened. In this case, both IIMI and the collaborating partner should have the same objectives and work along together as partners with similar motivational bases. The other type is the collaboration with the organization in which institutional development is attempted.

This perhaps is similar to a doctor-patient relationship in which common objectives become the driving force. A constant interaction process forms the core content in both. In reviewing IIMI's research program, Levine (1993) referred to four types of collaboration that IIMI may obtain from the partners: tolerance, cooperation, partial partnership and full partnership. In institutional development activities, it is essentially the full partnership type of collaboration that needs to be achieved. Essentially, the collaboration should lead to some corrective measures and their consolidation. These steps make a useful change in the quality of the organizational behavior and the value system of the organization, which would be the target of the institutional development intervention. The scope and character of this final change determines the success of the collaboration eventually.

CONCLUSIONS

In some countries, the main institutional constraints to irrigation performance are officially acknowledged, and an interest is emerging to find workable solutions for reducing these constraints. In some others, farmers show cooperative behavior at the lower levels of the irrigation system, and officials are gradually changing their attitude towards identified problems and underlying issues. Generally, the inter-agency cooperation in the traditionally worrisome irrigated agriculture sector has shown a clearly visible improvement. The policy environment has been the most responsive to suggestions for change. The climate is now becoming conducive to realizing impact of research.

Experience shows that the path to institutional development for achieving research impact is through applied and adaptive research. For impact, research efforts need to be directed towards developing locally applicable improved management practices and institutional processes. The following strategies can pave a clearer path towards this goal:

- 1) Recognize that there is some "latent capacity" in the existing institutional framework, and that it is possible to get reasonably good results from restructuring and reorientation;
- 2) Consider the creation of new organizational units, or the introduction of radical institutional innovations, only when modifications to existing institutions cannot fully cater to the identified needs;
- 3) Initiate the process with an internally supported needs assessment in each institutional set-up chosen for the institutional development program, ensuring that the process comprehensively covers the organization as well as its underlying rules system;
- 4) Link institutional development activities (wherever they are considered necessary) as an essential component of research efforts which are preferably conducted in a collaborative mode; and
- 5) Note that a prerequisite for a successful institutional development and impact-oriented research efforts is the adequate policy support, without which even the least controversial change will not gain root easily and a radical change will be simply impossible.

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