

Forethoughts from the Editor

Generally speaking, the goal of all science—natural and social, is the generation of new knowledge. However, science also has the practical function of contributing to socioeconomic development. If we can accept the potential of science to contribute to technical advances that are designed to improve economic and social well-being, then a major issue is how to assess the impact of research on socioeconomic development.

This is of especial urgency for developing countries having only a limited capacity (in human resource and financial terms) to engage in a full range of university research and industrial-sponsored R&D.

It is also a major concern in the developed world, where the present organization of research systems can be characterized by rapid advances and growth in the knowledge base. Nevertheless, this occurs in the context of persistent social, economic, and environmental problems.

In research policy terms, this means that we are not adequately using the knowledge we are generating, and we are not producing the knowledge that we actually need to deal with complex social and environmental problems. This is exacerbated by the difficulty of defining the relationship between research and policy: answering the question of how to communicate research results to policy-makers, or translate research results to fit a particular policy context.

This implies the necessity to re-examine the traditional assumptions of a research support system based on a linear understanding of knowledge and socioeconomic development. It also raises the central issue of accountability (at the financial, program, project, and/or national objectives level).

A major problem in determining accountability through research evaluation is answering the question of how to assess the (potential or actual) effectiveness and impact of research. This is especially difficult where social relevance or social accountability is concerned; given that social impacts are not often evident on the short term.

The authors contributing to this special issue of *Knowledge and Policy* address these fundamental issues in the developing country context. The various contributions are divided into three primary categories.

I. What methods should be employed to evaluate the amount, nature, and quality of the different kinds (and levels) of research conducted in developing countries, and to improve the effectiveness of research?

In the introduction to this volume, Davis and Carden provide an overview of the styles of research evaluation and those issues central to the role and conceptualization of the evaluation of the effectiveness of research in developing countries. The authors outline the approaches to research evaluation, examine the potential role of evaluation in increasing the productivity and effectiveness of research, and review the quantitative and qualitative methods available for assessing the impact of such research.

In the second article, Horton more specifically addresses program evaluation in agricultural research (organizations). He stresses the inadequacies of existing paradigms and methods and outlines the difficulties involved in effecting a paradigm shift. He points out that the development of agricultural program evaluation has primarily been related to external demands for accountability. He outlines the historical development of agricultural research evaluation and concludes that its relatively myopic development is related to two primary factors: 1) the "hard-science culture" found in agricultural research organizations; and 2) the fact that such organizations employ a mix of professionals from various scientific disciplines.

Carden, in the third article, considers the issues of research evaluation at the international level, pointing out that the role of evaluation in fostering development is now in question. He stresses that, unless the role and perception of evaluation in the development context changes, it will increasingly resemble the "audit-oriented" approach found in, for example, North America. Moreover, he finds that while the tools of evaluation have changed, the fundamental principles underlying evaluation have not done so.

As do many of the authors in this issue, Carden stresses that "context" is crucial. He also makes a fundamental point directly or indirectly evident in all of the articles included in this issue: "there are increasing demands in the development research community to ensure that the research which is carried out is relevant to the needs of the communities involved." The role of evaluation must then be to determine what these are, and whether they are indeed being met by (or are relevant to), the research in question. In this context Carden emphasizes the role of "empowerment," which stresses the involvement of the users (or clients) at every stage of the evaluation of a research activity.

II. How should evaluations be organized?

In the fourth article, Biggs and Smith remind us that the planning, management, and evaluation of agricultural research and extension (R&E) involves more than the development of better systematic methods. They point out that methods currently employed for these purposes have generally underestimated complex social processes. In many cases, the methods used do not even correspond to what practitioners consider "good practice."

Furthermore, as systematic planning methods and techniques (S&T) become more sophisticated, practitioners and their experience are increasingly marginalized.

They propose a "coalition framework," whereby an analysis can be made of the interactions of contending S&T coalitions and the manner in which coalitions of researchers, farmers, and other actors influence the path of technological change.

Biggs and Smith claim that such a framework can: 1) elucidate the development of past technologies and methodologies; and 2) that this knowledge can aid both practitioners and methodologists in the planning and management of R&E.

III. What is the effectiveness of the organizational and institutional structures available to carry out the scientific process?

In the fifth article, Thulstrup maintains that the successful introduction and adaptation of new technologies in developing countries is dependent upon sufficient national research capacity. He points out that the availability and quality of training in many developing countries is insufficient to generate and maintain a critical mass of human resources. He stresses the need to carefully monitor and evaluate existing programs designed to build research capacity. He proposes a checklist for this purpose.

In the final article, Russell and Galina signal specific problems related to conducting research in developing countries; problems that form the basis for important differences in the manner in which science is practiced in the developing world. They include, for example, isolation (from mainstream science); the need to develop indigenous research capacity; the lack of a critical mass of researchers; and the lack of communication channels. However, they also stress that there is a need to develop a new local science designed to solve local problems. These factors considerably complicate the evaluation of research performance in developing countries, particularly with respect to the evaluation of locally oriented research.

Conclusion

Perhaps the fundamental question involved in assessing research can best be summarized as follows:

On the basis of what criteria must the long-term accountability of public funds allocated for research be measured, and who should determine these criteria? Should these criteria be based on the quality or the quantity of research produced; on the actual utilization of the research results; on the relevance of research to one or more aspects of "development"; or on the medium- or long-range "potential" impact of research results? Should these criteria be in accordance with "international" standards or reflect primarily national goals and objectives?

In addition, there is the complex issue of knowledge integration, an understanding of which is a prerequisite for the generation of a "generic frame-

work” designed to focus on the organization of communication between science and the social environment.

Given that research and knowledge generation are becoming increasingly international in scope and impact, it is insufficient to merely contend that knowledge integration must occur through various forms of collaboration involving cross fertilization and interdisciplinary perspectives. This is already complicated at the national—let alone the international—level.

Unfortunately, none of these issues have thus far been solved by the ever-expanding range of tools available for assessing research.

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