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## Monitoring and Evaluating Agricultural Water Management Projects

### *Better Tools for Better Results*

Increasing agricultural production is necessary to feed growing populations, raise the incomes of poor farmers, and boost national export revenues. But in poor, water-scarce areas of the world, it is impossible to raise production without first finding ways to get more out of limited supplies of water, the ultimate scarce resource. Increasing the efficiency with which water is used is one of the chief goals of agricultural water management (AWM). The World Bank is engaged in a wide variety of AWM projects, some common features of which are detailed in Box 1.

Continual improvements in the efficiency of water use depend on close monitoring and careful evaluation. But despite the scale and scope of AWM projects around the world, and their criticality to global efforts to reduce rural poverty and increase food security, the monitoring and evaluation (M&E) of AWM projects need considerable improvement.

A 2006 review of the World Bank's AWM portfolio by the institution's Independent Evaluation Group (IEG) identified several areas where M&E was not being used to full effect. A majority of AWM projects lacked concrete information on the progress being made toward project objectives. In fact, in many cases, no evaluation at all was taking place. Only one in three AWM projects established baseline data before the project began, and fewer than half established baselines prior to project completion. As a result, it was often difficult to assert with any degree of certainty whether a project achieved its goals or not, or when and where it fell

#### Box 1. Typical components of AWM projects

- Soil and water conservation in watersheds
- Small-scale irrigation
- Groundwater development and management
- Construction, rehabilitation, modernization, and upgrading of irrigation and drainage systems, flood-protection systems, and dams
- Formation and support of water-user associations and support to water users for greater agricultural production
- Improved management, operation, and maintenance of irrigation and drainage systems
- Better management of water resources
- Reform of water sector agencies
- Capacity building and training, drafting of legislation, improving gender equity in rural areas, and protecting the environment.

short. Only one in nine AWM projects was designed in such a way as to permit rigorous impact assessment. The report stressed the need for greater emphasis on outcomes and impact measurement in project design. It also concluded that the effective implementation of projects was routinely compromised by inadequate supervision.

In response to the IEG report, the Agricultural and Rural Development Department at the World

This note highlights important information from the "Toolkit for Monitoring and Evaluation of Agricultural Water Management Projects," Report 44799, Agricultural and Rural Development Department, World Bank, Washington, DC. Readers may download the complete cdrom toolkit from [www.worldbank.org/water](http://www.worldbank.org/water).

Bank developed the “Toolkit for Monitoring and Evaluation of Agricultural Water Management Projects.” The toolkit enables project managers to incorporate M&E into their projects, beginning with the design phase, allowing them ultimately to demonstrate convincingly the outcomes and impact of their projects. It also helps users determine how best to monitor and evaluate specific projects, how to ensure the optimum collection and analysis of relevant data, and how to determine the reasons for the success or failure of a project. It also contains some general principles that contribute to a greater overall understanding of the challenges facing AWM projects and the power of M&E to improve project outcomes.

The toolkit is designed for seven types of users: World Bank managers and task teams; government departments and agencies; managers and staff responsible for implementation or management of AWM projects; farmers and other stakeholders in the project area; consultants and other external organizations providing assistance on project design, implementation, and management; wider stakeholders from civil society with an interest in project outcomes; and other financing agencies involved in AWM.

## Better M&E Can Improve the Design, Implementation, and Assessment

Good M&E, as described in Box 2, can improve project design in several important ways. First, M&E can help to establish the causal connections between the logical framework of an AWM project and the emphasis on results analysis that has become an essential part the World Bank’s approach to development. Establishing parameters to be used in the M&E process, one of the nine key steps in the toolkit’s methodology (Figure 1), also assures that the project has realistic, achievable and measurable objectives—the key to assessing its degree of success. Finally, the collection and analysis of relevant project data provides an indicator of management capacity.

To improve M&E design, the toolkit makes several recommendations for future projects. First, M&E should extend beyond technical matters to (i) the institutional aspects of AWM projects; (ii) the civil works components of projects, such as improvements to managerial, operational, and maintenance

structures; (iii) the creation and support of water user associations; and (iv) capacity building in water management. Second, projects in which AWM makes up less than half of the overall development apparatus should focus M&E on implementation and process. These types of process projects should be results-oriented and flexible, so that they can adapt to the competing demands of non-AWM actors. Finally, M&E is strongest when there is a participatory quality to data collection and evaluation, so that stakeholders are invested in the project’s successful implementation and aware of its successes and failures.

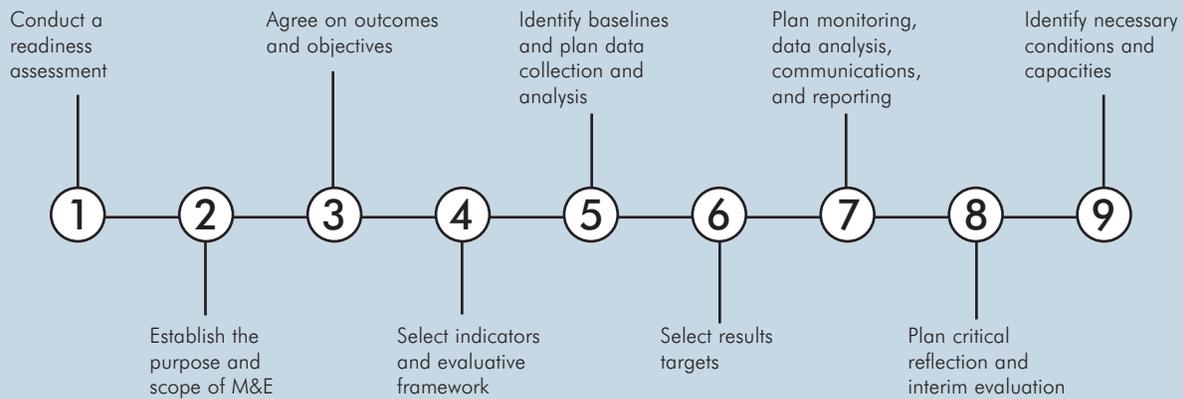
M&E must contend with challenges in most AWM projects. For example, the presence of many stakeholders with competing interests will complicate the assessment of project outcomes. Often, too, multiple projects are being undertaken in a given region, with varying timelines, which may

### Box 2. Monitoring and Evaluation: definitions and concepts

Monitoring—the continuous gathering of information during a project’s implementation—informs stakeholders of the project’s progress and suggests where adjustments may be needed. The data accumulated through monitoring often make it easier to assess the outcomes of the project and the sources of those outcomes.

Evaluation, by contrast, assesses the outcomes and impacts of a project relative to its objectives and expectations and helps explain variations between them. Good evaluations allow project managers to adjust funding allocations in light of comparisons between project components and across projects. They also make it possible to determine the most cost-effective ways of realizing the objectives of a given policy, whether in AWM or another area.

M&E are complementary aspects of project design and assessment, in that monitoring raises questions for evaluation, while evaluations flag new monitoring needs. M&E also can be used to diagnose and address specific problems of project implementation. In process-oriented projects, in particular, where the goal is to find the best way to meet project objectives, M&E can provide direction on how to get there. In “blueprint” projects where the route is specified in advance, M&E can provide information for reviewing the project’s relative success.

**Figure 1. Steps in planning a results-based M&E system**

Source: Adapted from Kusek and Rist 2004.

affect the ability of managers to accurately assess the success of a specific project. AWM projects are also becoming increasingly decentralized, making it more difficult to assure that a specific project is implemented, managed, and monitored in the way it was intended.

The wide variety and sheer number of AWM projects in which the World Bank is engaged are matched by a corresponding range in the technical and management capacities of individual and institutional actors, which means that projects must be tailored to the specific constraints of a project area. Conditions external to the project itself may compromise project effectiveness—and inevitably reality is more complex than can be accounted for in a project's design. Nevertheless, M&E provides an important tool for determining a project's effectiveness in achieving articulated objectives.

### Results and Implementation Monitoring: New Standards for AWM Project Design

Results monitoring measures the extent to which a given project contributes to the overall objectives of AWM, as well as the extent to which actual outcomes match the outcomes anticipated in the project's design. A results-based approach to

development focuses on causal connections that can be clearly established (using logical framework analysis). Following the classic “if, then” logical paradigm, a particular project's design should predict that certain outcomes will occur if the project's various components are implemented properly.

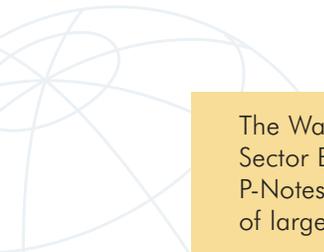
Implementation monitoring, by contrast, measures the effectiveness and efficiency of the project's process, paying close attention to the management information systems put in place during and after the project. The emphasis therefore is not on the narrow technical qualities of the project, which are relatively easy to measure, but instead on management personnel and institutions.

Results monitoring is more complex than implementation monitoring. The complexity arises in part from measurement challenges, such as establishing a pertinent time horizon for evaluating a project's impact. Additional complexity derives from the difficulty of attributing changes directly to the project, given the many variables external to the project that may affect its outcomes.

These challenges are worth overcoming, however, and AWM projects should be designed to achieve definite, measurable outcomes that can be assessed in light of the five criteria of logical framework analysis:

- The *impact* that can be directly attributed to the project
- The *relevance* of the project to meeting overarching policy objectives
- The *effectiveness* of the project in meeting those objectives
- The relative *efficiency* of the project in terms of maximizing impact while minimizing cost, and
- The sustainability of the project—that is, the likelihood that it will continue to provide benefits once the external funding has been eliminated.

The M&E toolkit helps managers ensure that AWM projects are designed with these criteria in mind. The ultimate goal, of course, is to see that World Bank projects achieve the most beneficial impact for their intended recipients—a goal that is more likely to be achieved where rigorous M&E techniques permit timely adjustments and corrections to ongoing projects and improvements to the design of future projects. In a world where agricultural demand is constantly increasing and the resources available to meet that demand are stretched to the limit, M&E are invaluable tools for making the most of what we have.



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