

5. Summary and Conclusions

These strategic guidelines are written by impact practitioners primarily for those who conduct ePIAs on interventions generated by national and international public-sector agricultural research institutes in developing countries. They are drafted from a pragmatic point of view and respect the fact that both resources and human capital for impact assessment are scarce in many institutes. Therefore, this document does not recommend what is ideal; rather, it points out what is practical and desirable. In the same spirit, these guidelines present information on many state-of-the-art applications that come within the realm of the practical and the desirable.

The guidelines are grounded in the empirical reality of recent meta-analyses and syntheses that point to what could be improved in conducting ePIAs and in responding to the demands of donors for greater documentation of impact closely related to the MDGs. The most acute need is to improve the quantity and quality of ePIAs in research areas such as NRM, livestock, post-harvest, policy, and capacity building, where only a few ePIAs have been carried out and where only limited funding has been allocated. For the assessments that have been conducted and evaluated, much of the resulting knowledge in key areas is especially fragile. The environmental consequences of a technology are not often reported reliably in ePIAs of NRM and genetic improvement technologies, and the link between research output and decision-making outcomes tends to be weak in policy-oriented ePIAs.

These guidelines are also grounded in proven differences between assessing the impact of agricultural research and assessing the impact of interventions in health, education, and other sectors. With agricultural research, impact hinges on the adoption of research outputs and adoption is therefore a necessary condition for success. Such successes, however, tend not to be normally distributed because relatively few research interventions are adopted

by potential users. In general, documenting key success stories is essential to arrive at an initial understanding of the productivity of any agricultural research program. Therefore, these guidelines advocate an approach that accumulates the results of economic rate of return assessments in what is called 'impact accounting with success stories'. This approach results in lower bound estimates of the economic productivity of research. The lack of ePIA studies documenting success stories can be used to identify underperforming research areas and thus highlight priorities for undertaking research to understand why actual impact does not match expectations in certain areas.

These guidelines are also based on the understanding of where ePIA fits into the carrying out of evaluations. In the CGIAR, EPMRs of its centers and internally commissioned external reviews of the programs within centers are important mechanisms for evaluation. If these mechanisms did not already exist, these guidelines would have given more emphasis to the carrying out of external evaluation.

The following four themes weave their way through these guidelines and underscore the need to take a sequential approach to ePIA.

- Firstly, the two main types of ePIA discussed are economic rate of return assessments and multi-dimensional impact assessments. The former focus on what are called Stage I outcomes and closely related impacts to adopters while the latter focus on one or more Stage II impacts further along the impact pathway. In general, Stage I ePIAs that focus on direct effects to adopters should be rigorously carried out before other consequences along the impact pathway are evaluated in the usually more costly and specialized Stage II ePIAs. In the same vein, multi-dimensional impact assessments are a priority for research areas where economic rate of return assessments have already been carried out. For

research areas where sufficient success has yet to be recorded, economic rate of return assessment remains the priority.

- A second theme that resonates throughout these guidelines is the need to enhance the depth of ePIA by going along the 'input-output-outcome-impact' pathway. Going further along the impact pathway does not argue for a comprehensive quantification of all possible impacts. In terms of the MDGs, ePIAs in agriculture should be held to the same standard as ePIAs in other sectors. Successful ePIAs are those that focus on the purpose of the intervention and on a small subset of intended and unintended consequences further down the impact pathway. As much as possible, purposes should be crafted in terms of intermediate outputs that are characterized in the literature by well-established empirical linkages to the MDGs.
- A third and recurring theme is the need for better preparation for conducting ePIAs. Careful elaboration of the input-output-outcome-impact linkages using impact pathway analysis is one way to focus on priority outcomes and impacts for evaluation. Three detailed impact pathway maps are presented in these guidelines. Outcome mapping also holds promise in laying a foundation for subsequent ePIA. State-of-the-art applied field research that contributes to the elucidation of specific environmental, nutritional and health, and social consequences should be recognized as supporting future ePIAs. These guidelines describe a participatory process involving all the scientists in a research institute in choosing which interventions should be the subject of an ePIA. Such a process should also contribute to enhancing the efficacy of ePIA. Lastly, data from the increasingly available national surveys on household income and consumption expenditure often represent underutilized resources that could contribute to more informative ePIAs. Practitioners should become more familiar with such datasets in the regions where their research institutes operate.
- The final recurring theme centers on the issue of quality in terms of the conduct of ePIAs. The hallmarks of good-practice ePIA are transparency and analytical rigor. Desirable traits for good-practice

economic rate of return assessments also include sufficiency of information for meta-analyses; reasoned hypotheses on expected but undocumented consequences; and technological generalizability, readability, and peer review.

Examples of good-practice ePIA are referred to in the text in key references at the end of the sections and subsections, and in Annex A.

For impact practitioners, research managers, donors, and other readers, these guidelines may not only confirm conventional wisdom about ePIA but also provide several surprises. ePIA should be viewed as an integral part of research evaluation as it is a dual-purpose activity that contributes to both accountability and strategic learning. The linkages between ePIA and research priority setting in general, and between ePIA and *ex ante* impact assessment in particular are priorities for strengthening. Siting ePIA in the research domain of research centers also helps to engender an impact culture because scientists see ePIA as a scientific exercise and not as a subjective undertaking that marshals information mainly for press releases or as a component of compliance auditing. Perhaps more surprising is the importance assigned to agricultural experimental data in estimating benefits, the emphasis on generating reliable estimates of adoption, and the view that, unlike multi-dimensional impact assessments, good-practice economic rate of return assessments can now be conducted without before-and-after comparisons.

Poverty alleviation is the capstone consequence in a hierarchy of desired outcomes and impacts presented in these guidelines. Poverty alleviation is also the consequence that most interests donors to public sector agricultural research. How to make ePIAs more poverty friendly in terms of documenting specific impacts on poverty's multiple aspects commands considerable attention in these guidelines. A small step towards enriching the documentation of the impact on poverty is to extend economic rate of return assessments in the direction of multi-dimensional impact assessments. Ways to enhance the poverty assessment content of economic rate of return assessments include:

- Estimating the importance of an intervention's net benefits on the incomes of poor beneficiary households
- Eliciting human interest stories
- The qualitative assessment of key poverty aspects that condition the consequences of and contextualize the research intervention.

These guidelines identify several areas needing further research to improve the conduct of ePIA. They range from multi-disciplinary research on how to better document the nexus between output–uptake–influence–outcome in policy decision-making, to institutional assessments of the incentives for investing in ePIAs.

This guidance document suffers from the limitations outlined in the introduction. Mostly, they are less inclusive and comprehensive than they could be as they focus mainly on the impacts of technology and less on policy-oriented research interventions. They do not address the contribution

of research to scientific knowledge or to capacity building. Most adequately funded and staffed agricultural research projects and programs should be able to claim to have contributed to scientific knowledge and capacity building, which in turn should eventually translate into new technologies. The practical impact of such technologies is the overriding concern of these guidelines.

In closing, it is important to point out that these guidelines dispense advice on ePIA. They are not, however, the last word. Their publication is timely because the years 2007 and 2008 were marked by two watershed events for agricultural R&D: the World Bank revisited agriculture in its World Development Report for the first time in 25 years and world food prices reached historic highs. It is hoped that these events will focus more energy and efforts towards agricultural research and reverse the declining trend in real funding over the past 20 years. The pursuit of these guidelines should help to instill confidence that renewed interest in agricultural R&D is certainly not misplaced.

6. Bibliography

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Annexes

Annex A. Studies That Have ‘Substantially Demonstrated’ Impact

The following list provides examples of ‘substantially demonstrated’ ePIAs as cited in Maredia and Raitzer (2006) (marked with *) and Raitzer (2003) (marked with **). The classification of these studies as ‘substantially demonstrated’ is based on the criteria of transparency and analytical rigor that are discussed in chapter 2 of this document.

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Ryan J.G. 1999. *Assessing the Impact of Rice Policy Changes in Vietnam and the Contribution of Policy Research*. Impact Assessment Discussion Paper No. 8. International Food Policy Research Institute (IFPRI): Washington, D.C., USA.**

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Annex B. Evidence of the Impact on Poverty of Agricultural Research

The complex causes that underlie poverty make the assessment of the relationship between agricultural research and poverty alleviation complex. Given the diversity of livelihoods found amongst poor people (e.g., many poor households are simultaneously farmers, labor suppliers, net food buyers, and earn non-farm sources of income), poor households may experience gains in some dimensions and losses in others when a new technology or policy is introduced (Hazell, 2008). Despite this uncertainty of the magnitude and direction of the impact of a specific technology or policy, a large amount of research has been carried out on poverty issues and a number of studies shed useful light on how improved technologies can benefit the poor at farm and community levels. Some of the major findings and results reported in the literature are summarized below.

- There is a strong positive relationship between economic growth and reduction in absolute poverty, but no determinate impact on decreasing inequality (Deininger and Squire, 1996).
- There is a positive relationship between increased crop productivity and reductions in the number of poor people (Ravallion and Datt, 1996; Thirtle et al., 2003; Fan 2007).
- Improvements in productivity in agriculture generate more poverty reduction impact than a comparable shift in productivity in other sectors (Fan et al., 1999; Ravallion and Datt, 2002; Ravallion and Chen, 2007; World Bank, 2007).
- There are differential prospects for agricultural research to alleviate poverty across developing regions (Thirtle et al., 2003). Lifting one rural person above the poverty line was several orders of magnitude more costly in terms of investments made in agricultural research in Latin America (a more transforming and urbanized region) than comparable expenditures in Asia and sub-Saharan Africa (which are more agriculture-based regions).
- When landholding is severely skewed and technological change is capital intensive, agricultural research becomes a blunt instrument to alleviate poverty. For instance, the dramatic technological change that took place in Brazil in soybean production, in minimum tillage, and in other commodity areas in the 1990s probably contributed little to the widespread reduction in rural poverty. This reduction was achieved mainly via income transfers and employment in the rural non-farm economy (World Bank, 2007). In contrast, strong performance in labor-intensive horticultural crops in Chile fueled a significant reduction in absolute poverty mainly through the rapidly rising demand for agricultural labor (Anriquez and Lopez, 2007).

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