

Assessing the contribution of impact assessment to donor decisions for international agricultural research

David A Raitzer and Timothy G Kelley

Ex post impact assessments (epIAs) have long been produced by research centres of the Consultative Group on International Agricultural Research (CGIAR) with a principal stated goal of informing the funding decisions of donor agencies, but there has been little formal analysis of the extent to which epIAs actually do so. To address this issue, the present analysis investigates how epIA results contribute to donor decisions via three techniques: comparison of epIA results with subsequent funding patterns; an email survey of CGIAR donors; and interviews of donor representatives. Comparison of aggregate estimates from large economic epIAs with funding patterns revealed little correlation between assessed impact and subsequent relative funding levels. Email survey responses indicate high demand for metrics directly related to poverty and which are ‘far down the impact pathway’. EpIAs are also reported as important in allocation decisions. Interviews of donor officials revealed that factors such as political priorities, perceived scientific quality and desires for continuity often influence funding decisions more than consideration of past impacts. In this context, the influence of epIAs is often indirect and ‘conceptual’.

WITHIN THE CONSULTATIVE GROUP on International Agricultural Research (CGIAR), *ex post* impact assessments (epIAs) are generated to offer evidence to funding bodies that agricultural research investments effectively contribute to development goals, under the stated purpose of ‘accountability’. It is also assumed that future allocation decisions are affected by perceptions of prior performance of investments and that epIA helps to inform these perceptions (IAEG, 1999). To serve this function, the CGIAR has dedicated extensive effort and resources to impact assessment, which has yielded considerable evidence

that agricultural research is an exceptionally efficient form of investment (Raitzer, 2003).

Yet, Alston *et al* (2000) observe that ‘support for international research is dwindling despite seemingly strong evidence that it pays off handsomely’. Regardless of impressive indications of effectiveness, donor fatigue has plagued the International Agricultural Research Centres (IARCs) of the CGIAR (Anderson, 1998). This suggests that the evidence produced may not have fully fulfilled its intended purpose of informing donor perceptions. However, no prior formal analysis has investigated whether this is the case.

While an entire body of peer-reviewed literature has been dedicated to the issue of ‘evaluation use’ by the broader evaluation community (Shulha and Cousins, 1997), little of this analysis has been empirical and none has dealt with impact assessment of research. Impact assessment of agricultural research has been pursued with remarkably little reference to demands from any audience group. Volumes have been written on impact assessment methods with only passing mention of audience interests and uses, for example, Alston *et al*, 1996.

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This study explores how CGIAR donors use epIA studies, and whether the assumptions underpinning the accountability rationale for epIA are valid. In the remainder of this first section, background information on the role of epIA as an accountability tool in the CGIAR System is provided, and key findings of prior investigations of evaluation use are outlined. The following section describes the methodologies employed in the present analysis using:

1. A comparison of donor funding trends and impact assessment findings;
2. An email survey of donor preferences for epIA methods and approaches; and
3. A series of telephone interviews to explore how epIA results influence donor decisions.

The results section presents key statistical trends in answers provided to the two methods of inquiry. The discussion and concluding sections draw inferences in the context of the evaluation literature about how epIA feeds into donor decisions, and implications for epIA activities are identified.

*The Consultative Group on
International Agricultural Research*

The CGIAR is the backbone of the public sector international agricultural research system. For over 30 years, the CGIAR has promoted science-based global efforts to alleviate poverty, especially in rural areas. Created in 1971, the CGIAR is a strategic alliance of countries, international and regional organisations, and private foundations (presently 64 members — donor agencies with regular funding commitments) supporting 15 IARCs that work with national agricultural research systems, civil society organisations and the private sector.

The alliance mobilises science to achieve its overall mission of reducing poverty, promoting agricultural growth and protecting the environment. The IARCs undertake research under six broad categories of ‘activities’: Improving policies; germplasm enhancement and breeding; saving biodiversity; protecting the environment, production systems and management; and strengthening NARS. Since its establishment, the CGIAR community has invested over US\$8 billion (2006 inclusive, in 1990 dollars) in various research and research related activities.

Impact assessment in the CGIAR Operating as a publicly funded entity that produces international public goods, the CGIAR is not driven by market forces, as the primary support for the system comes from developed country governments that ‘purchase’ the IARCs’ services on behalf of the developing countries’ poor. Thus, in the absence of market information, empirical analysis is needed to determine if funds invested in the CGIAR’s agricultural research activities are effective in making progress towards achieving its mission.

EpIA is intended to fulfil this function by providing analysis that is:

intended to determine more broadly whether the program had the desired effects on individuals, households and institutions and whether those effects are attributable to the program intervention. (Baker, 2000)

These ‘desired effects’ are in terms of the CGIAR goals.

The focus of CGIAR epIA has generally been on ‘successes’ and, in a research context, such a focus may be considered logical for epIA (although not for other forms of evaluation). Research outputs may have a number of impact pathways, both intended and unintended, prompting further intermediate activities that indirectly contribute to change. Since an impact assessment can focus only on a subset of pathways, a positive impact may be reasonably shown under certain conditions but it is nearly impossible to prove that research is an ‘impact failure’, as there will always be additional uninvestigated avenues for potential impact. As a small proportion of a given research portfolio usually accounts for a large proportion of documentable impact (Zilberman and Heiman, 2004), this focus on ‘success’ means that only a small proportion of the CGIAR portfolio is subject to epIA.

Although epIA is only one component of a comprehensive evaluation system used by the CGIAR, which also includes comprehensive evaluations, internally commissioned reviews, performance appraisals of staff, and donor evaluations, it is the only element dedicated to generating empirical results on the contribution of research to indicators directly related to the CGIAR mission (Kelley *et al*, 2008).

Accountability, resource mobilisation and influence on allocation have long been among the primary stated objectives of epIA. In 1984, when the first impact assessment effort across the CGIAR System was initiated, the role was articulated to provide ‘an important means of influencing agencies in the donor countries that supply funds for the CG System’ (CGIAR Secretariat, 1982). Influence on donors is still the dominant explicit justification for

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CGIAR impact assessment activities. Accountability is primarily to donor agencies and the constituencies that lend popular support to their investments. As a consequence of fulfilling accountability demands, funding agencies are assumed to shift allocation decisions regarding future research possibilities. The allocation objective implies an even more direct role for epIA in funding decisions, as it is envisioned that documentation of past patterns of impact will help to inform investment priorities for the future. Prior studies of evaluation utilisation, however, suggest limitations on the degree to which this objective of direct influence may be fulfilled (Shulha and Cousins, 1997).

The key concepts of evaluation use and influence

Much attention has been given to evaluation utilisation by the broader evaluation community, and considerable effort has been devoted to the establishment of typologies of use. This has resulted in four generally accepted categories of utilisation: instrumental; symbolic; conceptual and process (Leviton and Hughes, 1981; Shulha and Cousins, 1997). Many other sets of typologies have been developed since these categories emerged, but none appears to be as commonly accepted in the evaluation literature as this classification (Shulha and Cousins, 1997).

- *Instrumental use* This type of use refers to direct and traceable application of evaluation findings, so as to alter programme strategy and/or implementation (Shula and Cousins, 1997).
- *Symbolic use* This type of use refers to selective application of evaluation findings, so as to support a preordained policy preference (Leviton and Hughes, 1981).
- *Conceptual use* 'Conceptual use' or 'enlightenment' (Rich, 1977, cited from Leviton and Hughes, 1981) refers to incremental contributions of evaluation to the body of knowledge surrounding a programme or policy. This improved general understanding gradually informs the context under which programmatic decisions are taken.
- *Process use* Process use refers to the effects of involvement in the process of evaluation conduct (Shula and Cousins, 1997).
- *Use versus influence* The evaluation literature suggests that the term 'influence' may be more appropriate than 'use', as this places more emphasis on the outcomes of evaluation utilisation, rather than on intermediate processes. This term is intended to convey that 'influence is exercised in more subtle ways than the word "utilisation" — with its overtone of tools and implements — can capture' (Weiss, 1980). Usage of the term 'influence' is related to conceptual use, as both stem from recognition of the indirect pathways through which evaluation results percolate into the actions of decision-makers.

Study objectives

The key objective of the present study is to determine how results of epIA influence CGIAR donor decisions. More specific purposes are to:

- Assess the degree to which donor allocation patterns reflect consideration of impact assessment results; and
- Investigate the role of impact assessment findings in the formulation of donor perceptions of impact potential.

This elucidation of how donors consider and respond to epIA findings is ultimately intended to help improve the user relevance of future epIA studies. As there has been no prior empirical analysis of evaluation use in an agricultural or research context, this study pioneers a new area for evaluation utilisation research, and forms a first step toward a 'utilisation-focused' epIA approach for the IARCs.

Methods

This study investigates donor demands and uses for epIA results via three methods. One component investigates covariance between demonstrated impact and allocation decisions, to assess whether funding increases have any obvious relationships with documentation of positive impact. A second component examines demand for impact-related information through a survey to ascertain preferences for different epIA approaches, methods, and metrics. Third, the study involves a series of telephone interviews of CGIAR donor representatives to explore the context to which epIA results are applied and the pathways by which impact findings contribute to decisions within donor agencies.

Comparison of economic epIA findings and funding patterns

Aggregation of epIA results to date A meta-analysis of economic impact assessments was conducted as a first step in this study, so that the balance of impact evidence produced could be estimated and set against how donors actually allocated resources. This is achieved by compiling the evidence of large-scale economic impacts produced to date by the CGIAR system and disaggregating the evidence by research undertaking. The approach is limited to economic studies, as no other forms of impact assessment in the CGIAR produce quantitative and comparable results across research disciplines and projects.

If impact assessment is indeed a dominant determinant of subsequent allocation decisions, and a certain category of research is characterised by consistent and outstanding economic impacts, it seems reasonable to expect that the category of research would receive higher relative funding subsequent to

the finding, that is, allocations to those classes of undertakings with exceptionally high assessed levels of impact should, *ceteris paribus*, equal or exceed those of previous years. Alternatively, if these classes perennially receive proportionately lower allocations, this suggests other factors are dominating funding decisions. In those cases, economic epIA may still exert influence, but other influences collectively are more important.

The meta-analysis utilised a critical review of economic returns-focused epIA studies to obtain benefit values for aggregation in the numerator of the CGIAR benefit–cost ratio by undertaking. A complete description of the conceptual and analytical framework employed, including the principles and criteria for selection and evaluation of epIAs, is found in Raitzer (2003).

The initial selection of publications for review was based upon a comprehensive inventory of impact assessment literature. A minimum cumulative *ex post* benefit estimate of US\$50 million was set as the cut-off value as benefit estimates below that were insignificant compared to the total investment (US\$8 billion in 1990 dollars). Although necessary for the efficiency of the review process, this criterion alone was heavily restrictive and excluded many published smaller-scale epIAs that, in theory, might also affect funding decisions. Note, the distribution of assessed benefits among epIA of research is often skewed, so that a small proportion of the research portfolio often accounts for a large proportion of assessable impact (Zilberman and Heiman, 2004). As such, a few large-scale studies can capture most of the impact assessed to date.

The critical review process utilised a hierarchal review framework to isolate economic impact metrics that have been calculated with robustness from those that are ‘back of the envelope’ analyses. In this framework, two fundamental principles were used to evaluate the confidence that could be placed in impact assessment findings:

1. Transparency; and
2. Demonstration of causality.

Criteria and indicators were developed for each of these principles. While this review framework may

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not necessarily correlate precisely with how donors evaluate impact assessment studies, these standards are rooted in ‘good practices’ that have been repeatedly articulated by impact assessment professionals (Alston *et al*, 1996; Baker, 2000; and Maredia *et al*, 2000).

Comparison of demonstrated economic impacts with allocation decisions To compare aggregate patterns of demonstrated impact with actual allocation decisions, funding trends were compiled by research category for the period from 1990 to 2002. Due to changes in research classification systems, it was not possible to analyze beyond this period. Data regarding relative allocations among research activities were sourced from financial reports published by the CGIAR Secretariat between 1991 and 2003. Data on research expenditures are classified into five sets of research activities, which are employed in the present analysis.¹ The period of 1992–2002 was selected as the period for comparison of demonstrated impact with actual funding patterns to assess if allocation patterns follow impact patterns as demonstrated via documented epIA analysis.

Investigation of epIA use: email survey

To investigate how donors use epIA findings, a survey questionnaire was distributed to CGIAR donors. This survey was intended to explore the use of epIAs in allocation decisions and factors that facilitate epIA use.

The survey was prepared and emailed to 160 representatives of the 63 CGIAR member agencies in May 2003. Two follow-up reminders were subsequently sent to elicit additional responses. Means and medians were computed for all quantifiable questions. The Wilcoxon signed-rank test for paired differences was used to compare different categories, using the respondent as the treatment block.

Exploration of donor decisions and the influence of epIA: telephone interviews

Semi-structured telephone interviews of representatives of CGIAR donor agencies were used to explore ambiguities that remained after the email survey results were analyzed and to probe in detail how impact assessment results feed into decision-making processes. The format and structure of the interviews were based on preliminary analysis of the email survey results to identify topics that remained unresolved. A former representative of the Danish Government to the CGIAR conducted the interviews and recorded responses during the interviews. Interviews of 26 members — those responding to an earlier email notification of the survey — were arranged during October of 2004. The following areas were explored through the interview questions:

- Investment decisions and the role of impact findings;
- Donor perceptions of impact and how they are informed;
- Determinants of epIA readership; and
- Examples of use of epIA results.

To identify the prevalence of different answers to questions posed, 'content analysis' was performed on written summaries of interview responses, following Stemler (2001). Responses were translated into consistent categories, counted and compared, as described in Raitzer and Winkel (2005). The counts can be related only to frequencies, which are difficult meaningfully to appraise with statistical techniques. Therefore, qualitative inference of the significance of differences is needed for the results derived via content analysis. For those interval and ordinal data that are possible to compare with statistical analysis, non-parametric techniques were applied for which the Wilcoxon signed-rank test was used.

Results

Comparison of economic epIA findings and funding patterns

The literature survey, in combination with the criteria for selecting plausible analyses, resulted in a selection of 15 epIA studies. However, this full array of studies cannot be used for comparison with allocation patterns observed until lags between epIA result availability and decision processes are taken into consideration. As the most recent year analyzed in terms of disbursements is 2002, only epIA studies published before 2002 were included in the comparison, to allow for sufficient time for results to affect allocations.² The pre-2002 publication set includes only eight studies. These epIAs are identified and described in Raitzer (2003).

The distribution of benefits from the pre-2002 studies, depicted graphically in Figure 1, is as follows: 'genetic enhancement' is the source of 80% of the total assessed benefits, and 'production systems' research produces an additional 20%. Less than 1% is contributed by 'policy research', while 'environmental protection', 'saving biodiversity' and 'strengthening of NARS' are not represented among these benefits. If post-2001 studies are included, the proportion of benefits from 'genetic enhancement' rises even further.

Germplasm enhancement and production systems research, the two areas with greatest quantified economic benefits, experienced declining funding during 1992–2002. Between 1992 and 2002, the relative share of the CGIAR investment in germplasm enhancement had fallen by 24% and production systems research's by 37%. These were also well below levels recommended by the Technical Advisory Committee (TAC) of the CGIAR, the principal independent advisory body to the CGIAR members concerning scientific priorities.

At the same time, areas of the CGIAR portfolio that had been relatively minor, such as environmental protection research and policy research, experienced strong growth. Environmental protection and policy research both grew by more than 50% as a proportion of the CGIAR budget during 1992–2002. Funding for these categories of activities was substantially higher than was recommended by TAC. The two other research-related areas — capacity building and saving biodiversity — remained relatively constant over this period.

The share of the budget allocated to germplasm enhancement fell even as the largest economic impact studies were released for these research areas. In 1995, a global study on the impact of spring bread wheat breeding by the International Maize and Wheat Improvement Centre was released, which comprises 36% of the economic impacts included in the meta-analysis. However, in 1996, funding for

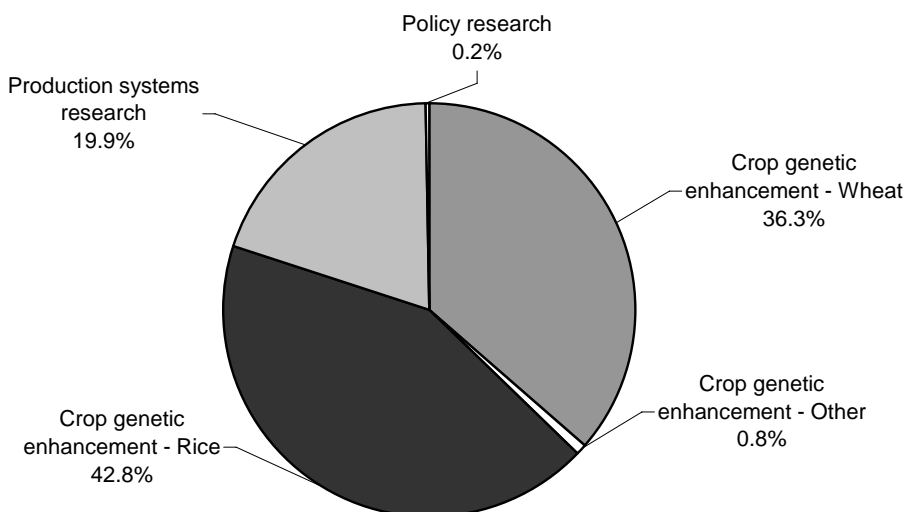


Figure 1. Percentage of benefits derived from different research areas in the meta-analysis of large-scale economic impact studies published between 1990 and 2001

genetic improvement fell by almost 20%, to 18% of total funding and well below the TAC-recommended value of 22%. In 1998 two more major impact studies were released for rice improvement research in Bangladesh and Latin America, yet funding for genetic improvement continued to remain below recommended levels through 2002. In 2001, a major large-scale study on the impact of cassava-mealybug biocontrol in Africa was released yet 'production systems' allocations continued to fall. The conclusion drawn from this part of the study is that there is no positive correlation between demonstrated economic impact and increased aggregate funding patterns. If anything, the correlation is negative.

Email survey

A total of 24 responses were received from 22 members including from 10 developed countries, six international organisations, four less-developed countries, and two foundations. Although the response rate is somewhat low at 35%, those members that responded represent the bulk of CGIAR allocations, collectively providing 69% of CGIAR funding in 2002. Thus, despite the small number of responses, a large proportion of total allocations were represented.

The respondents indicated moderate levels of satisfaction with epIA practices to date in the CGIAR. Using a 10 (highest) to 1 (lowest) scale, credibility/rigour was tied with 'relevance to institutional needs' with a median rating of 7.0. The lowest rated attribute was 'comprehensiveness of programmatic coverage' with a median score of 6.0. Although these ratings appear similar, 71% of recipients rated 'credibility/rigour' more highly than the other two attributes.

Along with external program and management reviews (EPMRs), epIAs were rated as influencing resource allocations more than all information sources specifically listed. EpIAs, although the highest-rated specific source of information, did not differ statistically in their rating from EPMRs and centre project reports. Of the 14 respondents indicating that epIAs had been used during allocation decisions, only 50% affirmed that specific studies had been used in this manner. In addition, one

respondent who had not directly used such studies affirmed indirect influence. Of those who declared direct use of specific studies, only two could provide details of the specific studies utilised.

Respondents indicated greater utility for studies that validate large-scale effects at the mission level, rather than assessments of recent research or research within the topics that the donor is currently funding. 'Bearing of indicators on development goals' (9.0) was most important, and statistically higher ranked than all other factors except 'magnitude/distribution of benefits' (8.5). 'Rigour of the assessment', 'relevance to current priorities' and 'ease of understanding findings' followed with a median score of 8.0.

Readership rates did not differ in terms of median values among epIAs, assessments of research output adoption, and science quality assessments. In terms of mean values, readership of epIAs was highest (4.2 studies/reports in the last two years), followed by science quality assessments (4.1) and adoption studies (3.6) (n = 20).

Member interviews

Representatives from 26 CGIAR member institutions participated in the interview process, and included representation from three less-developed countries, two foundations, six international agencies, and 15 developed countries. Although this includes representatives from only 41% of the 64 CGIAR members, the bulk of the CGIAR budget is represented, as collectively these agencies provided 92% of 2003 CGIAR member funding.

Member funding decision processes The decision-making processes by which total funding levels were determined in each of the member agencies were difficult to discern precisely. All members had total allocation levels either determined at a higher level in the bureaucracy concerned (the majority of cases) or funding was determined through an external competitive process. For the latter cases, the mechanisms by which total allocations to the competitive funds were determined were not investigated, as this is beyond the scope of the present study.

In the former cases, overall funding envelopes were determined through some level of interaction between higher political/bureaucratic levels and the official CGIAR representative queried. In 45% of cases, this interaction was described as a proposal initiated at the level of the CGIAR representative, which was then submitted to higher bureaucratic levels for modification and approval. In another 45% of cases, it was indicated that higher decision-makers determined overall funding levels within which relative allocation among specific centres and activities takes place. Decision processes described in this manner appeared to include little input from the CGIAR representative.

The conclusion drawn from this part of the study is that there is no positive correlation between demonstrated economic impact and increased aggregate funding patterns. If anything, the correlation is negative

Interviewees often indicated that decisions regarding overall funding levels were essentially outside their influence and that the deliberative processes were not necessarily systematic. As a result, the interviewees often had limited ability to describe how those at higher decision levels in the bureaucracy actually made decisions regarding overall funding to the CGIAR system.

Allocations among centres within the system and for specific research programmes are reported as decided at lower bureaucratic levels. It was described that typically, the official member representative receives input from others with technical expertise through a series of consultations, and thereafter finalises proposed allocations to centres and projects, within the overall budget framework established by higher management. Although it was reported that senior officials often need to approve these specific allocations, this decision is typically described as within the domain of the representative to the CGIAR.

Respondents were more definitive about the information they consider when making funding decisions across centres. The most commonly claimed basis for funding decisions was 'convergence with member institutions' priorities', cited by 88% of respondents. The most commonly cited institutional priority was 'emphasis on Africa'. 'Scientific quality' was the next most frequently considered factor (52%). 'Continuity' and 'past performance' were considered by 29% of the respondents. 'Continuity' is defined here as maintaining funding for centres or research areas that traditionally received support from a member in the past, and 'past performance' relates to reputation and feedback from experts/partners, as well as documentation and analysis of the performance of individual research activities. 'Past impact' was the fifth most frequently mentioned source of information considered, with about a quarter of respondents reporting this.

While it might be expected that members have not much flexibility in shifting funding from one programme to another, due to institutional priorities and desire for programmatic continuity, such was not reported. Rather, 74% reported at least moderate levels of flexibility to shift allocations in response to new information. More than half felt they had considerable flexibility.

Use of epIA in funding decisions Half of the interviewees made specific reference to utilising epIA to substantiate budget decisions. These responses often made use of the terms 'defending' and 'justifying' funding decisions to higher decision-making bodies. Importantly, the 50% who made reference to defence of budgets provide 58% of CGIAR funding. Only 19% of respondents indicated that epIA directly affects allocation decisions regarding the CGIAR, but those who reported such influence provide 24% of CGIAR funding.

When queried about an actual example of past use of an epIA study, only 46% could actually name

specific epIAs that they had read. An additional 15% cited evaluation studies and 12% promotion summaries rather than impact assessments. The latter two categories embed epIA results in their analyses. The remaining 27% could identify no specific study.

A majority of respondents (58%) indicated that epIA results are more useful in the context of other forms of information, for example, more details about the research assessed or other types of evaluation. Only 12% of respondents reported applications of epIAs outside of funding decisions. The uses mentioned included the formulation of programme strategies and guidance to domestic institutions.

Perceptions of impact potential and the role played by epIA When queried about research areas believed to have resulted in the greatest impact to date, there was some convergence between perceived past impacts, and those plausibly demonstrated by epIA studies (Figure 2). Although germplasm improvement received only 17% of CGIAR allocations in 2003, it was ranked as an important source of impact by 88% of respondents — more than was any other area of research. Natural resources management (NRM) research was next most frequently cited, mentioned by 50% of respondents, even though there is a dearth of documented evidence of impact for this research activity (Kelley and Gregersen, 2005; Lele *et al*, 2003). Policy and social science research follows, mentioned by 38% as a source of major impact; yet there is very limited documentation of impact for this research area (Lele *et al*, 2003). Germplasm conservation is cited as the fourth most important source of impact, as it was mentioned by almost 30% of those interviewed.

The meta-analysis of large-scale economic *ex post* studies of CGIAR research impact described earlier found that germplasm improvement generated 84% of plausible documented impacts (including studies through 2003), followed by pest management with 15%, and 1% for NRM research. When these results are considered with the limited documented impact for policy and NRM research, it is far from clear what specific information has mainly informed donors' perceptions.

Perceptions of future sources of research impacts deviated slightly from perceptions of past impacts. While 88% of respondents listed germplasm enhancement as a major source of past impact in the CGIAR, only 64% recognise this research activity as a source of future impact (Figure 2). At the same time, perceptions of impact from NRM research rises from 50% (past) to 68% (future). Similarly, policy research also rises from 38% to 54%. Other categories have little change.

When queried about the information sources used to inform these perceptions, epIA was mentioned less frequently (23%) compared to EPMRs (68%), expert opinion (55%) and interaction and direct feedback from centres (36%) (Figure 3). These categories are not completely distinct, however. EPMRs

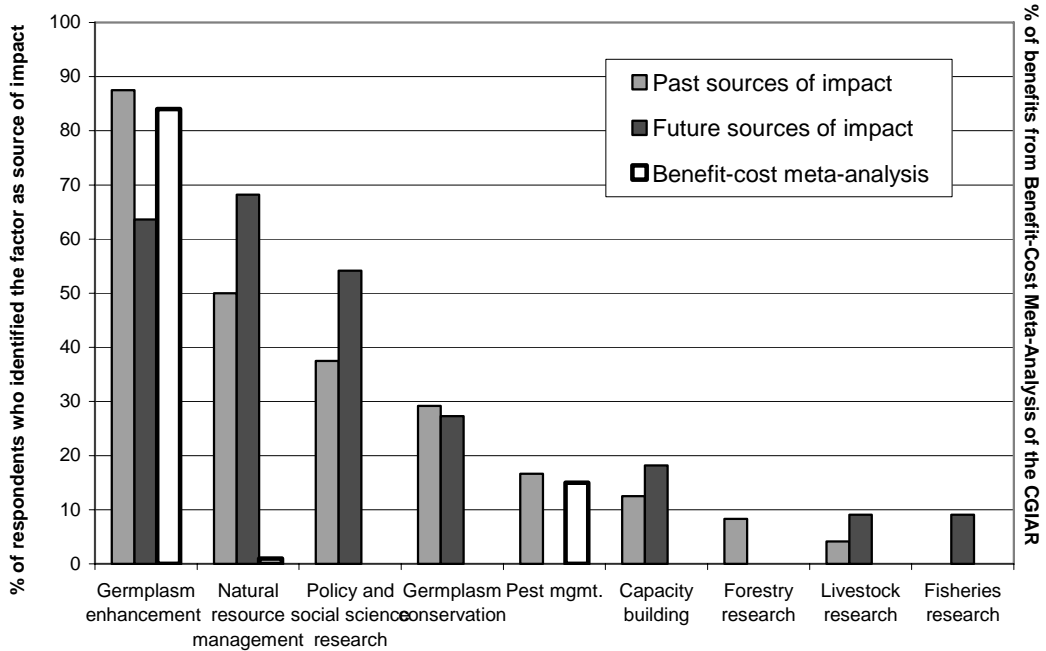


Figure 3. Reported perceptions of past (n = 24) and future (n = 22) sources of CGIAR research impact, as compared with those demonstrated to have large magnitude economic impact

embed epIA findings, and expert opinions may be based on many information sources including epIA studies.

Discussion

Limitations

Comparing economic impact evidence and donor funding decisions The meta-analysis is focused exclusively on economic impact studies. However, other non-monetary indicators may also be the subject of impact analysis. It is possible that other impact evidence has been ignored here, that is, the meta-analysis may not accurately represent the distribution of documented impact by source. As no

other indicators of impact have been produced with common metrics that allow for aggregation and comparison across research programmes, this short-coming cannot easily be rectified.

An inventory of the impact literature was made to identify any CGIAR-attributable technologies not subject to economic impact assessment, but with documented areas of adoption over 1 million hectares,³ as the largest documented economic impacts were well above this. Other than maize germplasm improvement, none was identified as published before the surveys and interviews were conducted. Thus, it can be concluded that it is unlikely that any CGIAR research with exceptionally large-scale documented impact has been omitted in a manner that would significantly shift the distribution of demonstrated benefits by research category.

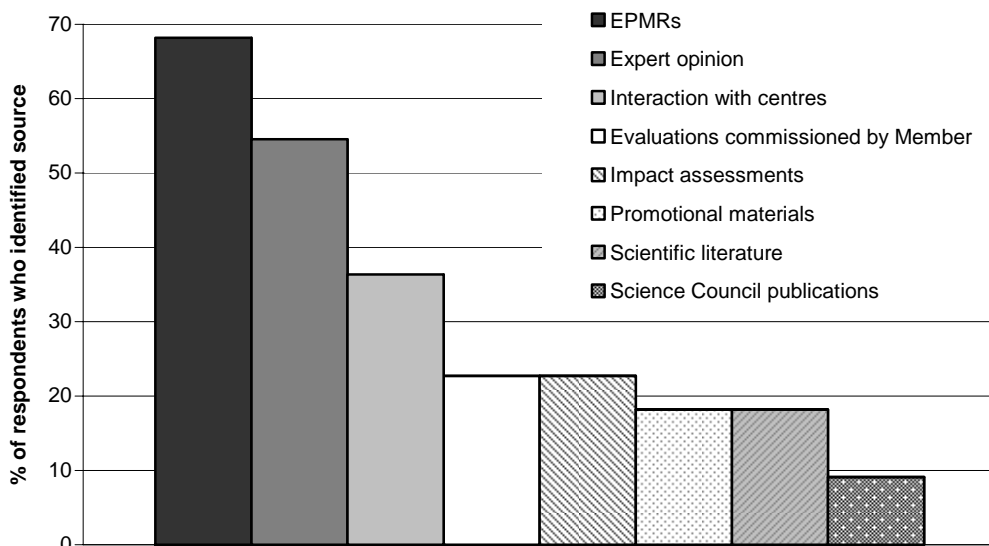


Figure 2. Sources of information cited by members for perceptions of past and future impact potential (n = 22)

Funding patterns indicate a gradual shift in the CGIAR agenda away from those research areas with greatest demonstrated impact during the period analysed

Limitations to survey and interviews If response bias has affected whether survey recipients and telephone interviewees replied to the survey/interviews, the respondent samples may not be representative. Interest and familiarity with the concerned topic is one of the strongest determinants of survey response rates and resulting bias, as responses are much more likely to be sent to surveys that address issues of importance to the informant (Sheehan and McMillan, 1999). Respondents in this case are likely to be more interested in epIA studies than non-respondents. This is perhaps the most important threat to the validity of this survey. Unfortunately, this error source cannot be avoided, as it is very difficult to ensure high levels of response. Consequently, the views expressed cannot be assumed as representative of the CGIAR membership at large. However, it is reasonable to assume that these results are representative of the portion of member population that uses impact assessments.

The 35% response rate for the survey and 41% for the interviews appear low, but is actually similar to or even higher than that encountered for other surveys/interviews of a similar nature (Sheehan, 2001). However, this response rate still translates into a relatively small pool of response data, which limits the degree to which trends may be extrapolated. Still, those donors who did respond to the email survey provide 69% of the total CGIAR allocation, and those who took part in the telephone interviews represent the vast majority of member funding to the CGIAR (92%), so a large share of funding decisions is reflected here.

Member decisions and the influence of epIA

Economic impact evidence and donor funding decisions Results of the meta-analysis indicate high aggregate benefit–cost ratios, but demonstrated impacts reflect only a limited spectrum of the CGIAR research portfolio. Germplasm improvement heavily dominates impact estimates with over 75% of documented economic impacts in aggregate scenarios. Integrated pest management contributes most of the rest, while vast portions of the portfolio are unrepresented.

Explanations other than lack of actual impact abound for this disparity of impact assessment results among research areas (Kelley and Gregersen,

2005). One explanation is that benefits arising from research outside of germplasm and integrated pest management are not amenable to quantification and valuation. Many of these benefits from NRM and policy-oriented research areas relate to other kinds of values, such as enhanced environmental services, equity, or empowerment, which are difficult to quantify.

Another line of argument points out attribution difficulties in relating quantifiable benefits to research activities (Maredia *et al.*, 2000). For example, it is claimed that the benefits quantified for germplasm improvement may be premised on complementary NRM research. However, it is impossible to isolate the contribution of these research undertakings from the effects of complementary influences, as there are many intermediate steps from the research output to ultimate goals.

As a result, it should be recognised that the lack of quantified benefit estimates for certain research areas does not necessarily mean that impact has not been generated. Smaller-scale, qualitative studies may also have illustrated some influences from these investments. However, those areas without quantified large-scale benefits should be more uncertain than those for which assessment has been performed. Thus, these patterns of findings could be expected to influence funding preferences.

Funding patterns indicate a gradual shift in the CGIAR agenda away from those research areas with greatest demonstrated impact during the period analyzed, as indicated and discussed by Lele *et al.* (2003). Investments in germplasm improvement, for which the vast majority of documented economic benefits exist, continually fell over the period, in terms of both recommended and actual allocations. Similarly, production systems research also comprises another category with documented benefits that received declining allocations. Even with TAC recommendations for reduced funding, levels continued to remain below even the reduced recommended levels for these areas.

These observations do not imply that epIA does not influence relative allocations, as the ‘counterfactual’ without impact assessment scenario could be much greater declines in those areas for which impact has been well documented. However, it does establish that epIA is not a dominant driving force for allocation decisions, as other factors must be placing dominant downward pressure on relative funding to these research areas. The interviews explored this preliminary observation in greater detail.

Decision processes The interviews illustrate that agricultural research funding decisions within member institutions are highly complex. At higher decision-making levels, there is considerable ambiguity in answers regarding how decisions are made as to overall funding to the CGIAR system. This reflects limited knowledge of higher decision dynamics among the interviewed population, and/or it may

indicate that these decisions are seldom systematic. Clearly, other factors than information alone, such as political ideologies, interests and institutions, affect how information is processed in organisational decisions, so it should not be surprising if the latter proves true (Weiss, 1999).

At lower decision levels, more details of allocation decisions among centres and programmes were provided, probably due to the greater roles played by respondents in these decisions. Moderate to high levels of flexibility regarding these decisions were reported. However, despite this freedom, the consideration of past patterns of impact in these deliberative processes is only marginal. Other factors, such as political priorities, scientific quality, and desire for funding continuity play much more prominent roles in these decisions.

Patterns of actual allocations can be expected to derive at least in part from perceptions of impact potential, assuming members are truly interested in efficient allocation of resources. Documented past impact should also inform perceptions of impact potential if epIA indeed influences allocation decisions (as discussed below). However, the information sources cited as a basis for perceptions of impact potential focus primarily on scientific quality, for example, EPMRs, expert opinion, and interaction with centres. EpIA is only the fifth most important source for such perceptions.

There are some important caveats to these observations. First, while only a small percentage of member representatives reported *direct* use of epIA in allocation decisions, those that did so include major and/or influential member organisations, such as the bilateral aid agencies of the USA and Sweden. Therefore, such influence may carry far more significance than the small proportion reporting direct use in the responses.

Second, the information sources listed as the basis for perceptions of impact often do review epIA results, so it is unclear what contribution to these perceptions is actually provided by *ex post* assessment.

Third, perceived past patterns of impact do follow the results of epIA. The link becomes more tenuous when extrapolated to perceived future impact potential, and it remains uncertain what role perceptions of past patterns of impact play in formation of perceptions of future impact potential. The interview process did not attempt to differentiate between information sources for past and future impact perceptions. When the context of agricultural research is considered, it may be appropriate for perceptions of future impact potential to be only partially informed by past patterns of impact. Research is a dynamic process, as research methods, topics, and approaches continually evolve over time. Lag times from the production of research outputs to impacts on mission-level goals are long and unpredictable, while the process of research itself is uncertain and may involve many 'dry holes' before successful innovation can be fostered (Alston *et al.*, 1998). When innova-

Perceived past patterns of impact do follow the results of *ex post* impact assessments. The link becomes more tenuous when extrapolated to perceived future impact potential

tion occurs, it is often the product of a host of complementary factors that allow for research to translate into impact by assisting in diffusion, and by making conditions conducive to adoption (Ekboir, 2003). As a result, it is difficult to relate historical patterns of impact to the potential of an evolving research portfolio. Information concerning current performance and relevance appear to play more important roles.

Fourth, information on past impact is difficult to use if it does not allow for comparative appraisal of performance across research activities, a point mentioned by two respondents. As noted by Kelley and Gregersen (2005), Lele *et al.* (2003), Raitzer (2003) and others, epIA coverage is heavily concentrated on a small subset of the CGIAR research agenda related to crop germplasm improvement. Thus, such partial coverage may not be helpful for decisions on allocations *across* activities, especially when other information is taken into account.

As a result, while there are strong demands for impact-related information, this is not as a direct determinant of funding decisions. In the email survey, epIA was reported to be the most important source of information listed for allocation decisions, although only 50% reported this type of direct use. An equal proportion of interviewees mentioned the importance of epIA for defending budget decisions, while an even greater proportion stated that epIA is more valuable in the context of auxiliary information.

Instrumental use

In prior studies of evaluation use, it has been observed that intended users of evaluations reported high rates of use in decision-making, but could not specify how evaluation findings were precisely applied (Patton, 1977, cited from Leviton and Boruch, 1983). In fact, evaluation use as a body of systemic inquiry arose largely out of the failure of evaluation to produce observable influence on public policies. However, when indirect patterns of influence are considered, evaluation appears to have more substantial effects. Yet, they are largely indirect and involve intermediate uptake events and recombination with other forms of information. Evaluation is thus recognised not to exert influence in isolation.

Evaluation complements and competes with many alternative sources of information.

Accordingly, the interviews and email surveys did not identify specific examples of donor decisions instrumentally shifted by epIA findings. The interviews further revealed that most donor agencies have few staff that deal exclusively with the CGIAR, as it receives a small share of most member agencies' development assistance budget. In the context of the many forms of information that these few staff receive, little time is devoted to consideration of specific impact assessments during funding decisions.

Conceptual use

Use of evaluation in a less direct 'conceptual' manner has been much more frequently documented. For example, Rich (1977, cited from Leviton and Hughes, 1981) found that evaluation frequently was used to improve the general understanding of decision-makers. Siegel and Tuckel (1985) found that the direct effects of evaluations on target policies was 'spurious' as more important influence is exerted through 'refocusing' and shifts in the overall understanding of issues concerning the evaluated programme. Boyer and Langbein (1991) observed that influence is not continuous, and may happen at critical junctures when evaluative information complements other information sources well. Similarly, the importance of 'contextual factors' has also been highlighted in recent literature, as use may occur only with the right mixture of timing and circumstance (Henry and Mark, 2003).

Hence, direct application of evaluation findings in specific decisions may not be readily observable, even if evaluation plays an important role. It is not surprising that direct changes in CGIAR allocation patterns are not observed after epIA indicates the value of particular research areas. However, the influence of such epIA may be exerted through enhanced understanding of how research can foster impact, or how the agricultural research system functions. Consequently, the consistently stated importance of epIA for donor decisions should not be dismissed simply because allocations do not follow demonstrated impact.

A number of contradictions are apparent in the interview and survey results regarding the role and stated importance of epIA for donor decisions. While epIA is stated to be the most important information source for allocation decisions in the survey, it is given lower ranking as a source of information for perceived impact potential in the interviews. Furthermore, the surveys indicate that only 50% of respondents have directly applied epIAs during funding decisions. This dichotomy may result from differences between questions that imply instrumental and conceptual patterns of use. The more specific questions that imply more direct forms of use may receive responses that indicate less application of epIA results, compared with those that allow for influence

through intermediate pathways, such as EPMRs. Consequently, it appears that impact assessment may have influence that is primarily 'conceptual'.

The optional comments by several respondents in the surveys indicate that conceptual use is indeed common for epIAs. For example, one respondent noted that 'it is vague stuff in this institution, but knowledge that such work is going on helps, probably' in allocation decisions. Another respondent indicated that epIA results had not been directly utilised but maintained that impact studies have influence:

a convincing impact study can contribute to decision-making because it illustrates the competence of a centre and its scientists or because it clarifies the state of the art and the problems that still need research.

The interviews revealed there was general awareness of impact demonstrated through formal assessment, as a majority of respondents successfully identified the research activities with the highest levels of assessed returns. While impact assessments were not cited by a majority of interviewees as the direct sources for these perceptions, the information sources most frequently cited do embed epIA results. Many of those who indicated no direct application of epIA findings during budget decisions still have these decisions influenced by epIA through more indirect means. As a number of respondents indicated, epIA may contribute to general perceptions about centre capacity or enhance confidence in centre activities, without shifting decisions in ways that can be easily attributed.

Symbolic use

Casual observations of 'symbolic use' or application of evaluation to legitimise decisions that would be undertaken anyway in the absence of the evaluation findings are common. Quantified patterns of such use are rarer, however. Knorr (1977, cited from Leviton and Hughes, 1981) provides some quantitative evidence of the prevalence of this form of use, and this was substantiated later by Shulock (1999). Initially considered as a form of 'misuse', Shulock (1999) recasts this use as a legitimate application of findings in a manner that contributes incremental influence, and which assists in the appearance of rationality by decision-makers.

The way in which 'accountability' is described as a purpose for impact assessment actually gives the impression of 'symbolic use', as 'justification of research investment' is a primary role for epIA (IAEG, 1999). Half of the interviewees spontaneously mentioned the use of epIA for the 'defence of budgets', a symbolic application. This form of use may also explain how high rates of use of impact assessment could be reported, while allocations appear to bear little influence. Hence, symbolic use appears to be common.

Process use

'Process use' is actually a form of 'conceptual use' transmitted through involvement in evaluation by intended users. Greene (1988, cited from Shulha and Cousins, 1997) and Patton (1978) suggest that involvement in evaluation stimulates use, while Turnbull (1999) produces quantitative evidence to substantiate this argument. Process use is largely irrelevant to epIA for donor audiences, as donors have insufficient human resources to become involved in the scores of epIA studies produced annually by the centres. In fact, for their accountability objectives, involvement would even be negatively perceived, due to the high value that donors place on independence in assessment conduct. Accordingly, there was little indication of process use in the survey response or interviews.

Conclusions

On balance, the evaluation use literature, the survey results, and the interview findings indicate that direct application of epIA findings for programmatic change is rarely observable. Rather, the primary pathways of influence are indirect and involve incremental improvement to the general understanding of programme functions and as justification for decisions taken on the basis of a range of considerations. Such conceptual influence usually involves combining evaluation findings with other forms of relevant information.

EpIA is one of several means of informing perceptions of past impact, which, in turn, only partially inform perceptions of future impact potential. Furthermore, allocation decisions are influenced by many other considerations than potential impact magnitude. While patterns of quantified benefits demonstrate the productivity of certain areas of research investment, those areas lacking quantified benefits cannot be concluded to be less productive, due to methodological constraints that have prevented them from being assessed. Until impact assessment coverage is more comparable across research topics, insights for priority-setting remain unclear.

There is wide divergence between quantified patterns of past impact and allocation patterns pursued by donors. Some of this divergence may be further necessitated by the fact that evolving research contexts and long lags between research and impact may limit the degree to which historical impact may be extrapolated into the future. On balance, it is not clear how instrumental a role could be rationally expected for such findings in allocation decisions.

It seems likely that there is scope for impact assessment findings to better complement other forms of information relevant to priority-setting to more effectively underpin allocation recommendations. This may be achieved by ensuring that other evaluative processes, such as EPMRs, embed epIA

Although *ex post* impact assessment is not a direct driver of specific funding decisions, the confidence in CGIAR capacity that epIA findings impart appears to be of substantial importance for continued support to the system

findings more effectively. Systematic means should also be developed to analyze the degree to which past patterns of quantified impact are relevant to future conditions, so that *ex post* analysis may better inform *ex ante* projections.

In conclusion, epIAs have been produced that show high efficiency from investment in a small subset of CGIAR research activities. Yet, funding continually declines for these research areas, relative to other unproven areas of research. Does this mean that epIAs are not used, despite strong stated demand for these analyses?

The findings of this study suggest otherwise. Although epIA is not a direct driver of specific funding decisions, the confidence in CGIAR capacity that epIA findings impart appears to be of substantial importance for continued support to the system. The precise pathways by which such confidence is engendered, however, remain enigmatic.

Donor decisions are complex, unpredictable, and embed a wide range of criteria. A multitude of information sources compete to influence busy donor representatives who have limited windows of opportunity for substantive changes in patterns of support. In this context, the influence of epIA is not of instrumental importance for most deliberative processes. However, the confidence that impact assessment findings inspire appears to play an important role in maintaining CGIAR credibility and overall funding levels. The CGIAR has successfully maintained stable funding growth, even as resources for international development have become scarcer, and other 'fads' in international development have come and gone. This empirical study indicates that epIA is likely to have contributed to this outcome.

Notes

1. More detailed research classifications could be applied in theory, but historical data are not available on the research category of expenditures at a more detailed level for the CGIAR system.
2. Studies published to date were used for a comparison of current perceptions of impact and epIA findings presented under 'Perceptions of impact potential and the role played by epIA'.
3. While this may be a somewhat arbitrary figure, it should be noted that the largest documented impacts of CGIAR research

stem from adoption over much larger areas, which approach 100 million hectares, or 100 times this figure in the largest cases.

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