A Framework for Evaluating Leadership and Capacity Investment by the Rural Industries Research and Development Corporation
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Foreword

Capacity building in rural industries is an area in which Australian Rural Research and Development Corporations frequently invest. For example, RIRDC has a number of capacity building related research programs in their portfolio such as RIRDC Rural Leaders, Investing in People and Horizon Scholarships.

Building capacity can alleviate constraints associated with industry development such as lack of leadership resources, shortages of research and other skills, poor knowledge management and poor understanding and communication between groups.

Across the RDCs, investments are made in scholarships, awards, conferences, leadership training and encouraging entry into agricultural industry professions. This report presents a framework for evaluation of capacity building investments for RDCs contemplating evaluation of one or more of their investments in capacity building activities such as leadership, training, awards and scholarships. The report identifies some activities and methods that may be undertaken to qualitatively and/or quantitatively evaluate investments that have been made, or are being contemplated to be made, in a range of capacity building activities.

The framework can be used as a tool for evaluation and assist in achieving better use of levy-payer resources for results in the capacity building investment area.

This report is an addition to RIRDC’s diverse range of over 2000 research publications and it forms part of our Investing in People R&D program, which aims to develop leadership and human capacity for primary industries and their communities and contribute to enhancing future labour supply to meet demand in primary industries for skilled occupations.

Most of RIRDC’s publications are available for viewing, free downloading or purchasing online at www.rirdc.gov.au. Purchases can also be made by phoning 1300 634 313.

Craig Burns
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# Contents

Foreword .................................................................................................................................................... iii

Contents..................................................................................................................................................... iv

Executive Summary....................................................................................................................................... vii

Introduction ................................................................................................................................................ 1

Objectives ................................................................................................................................................... 3

Methods ..................................................................................................................................................... 4

1. General Literature Review on Evaluation of Capacity Building Investments................................. 5
   1.1 Introduction ......................................................................................................................................... 5
   1.2 Purpose of evaluation ......................................................................................................................... 5
   1.3 Logic and frameworks of capacity building evaluation .................................................................. 5
   1.4 Tools for evaluation: quantitative and qualitative measures ........................................................... 8
       Qualitative ........................................................................................................................................ 8
       Quantitative ..................................................................................................................................... 9
       Mixing Qualitative and Quantitative approaches ............................................................................... 11
   1.5 Difficulties in capacity building evaluation ................................................................................... 11

2. Review of Evaluation of Some RDC Capacity Investments................................................................. 13
   2.1 Land and Water Australia (LWA) ................................................................................................. 13
   2.2 RIRDC .............................................................................................................................................. 14
   2.3 FRDC ............................................................................................................................................... 22
   2.4 GRDC ............................................................................................................................................... 24
   2.5 SRDC ............................................................................................................................................... 27
   2.6 GWRDC .......................................................................................................................................... 28
   2.7 Joint investments ............................................................................................................................... 28

3. Capacity Impacts and Their Valuation .................................................................................................. 30
   3.1 Impacts on individuals ..................................................................................................................... 30
   3.2 Impacts on the industry .................................................................................................................... 31
       Industry leadership courses/training ............................................................................................... 31
       Awards ............................................................................................................................................ 32
       Education and other support ............................................................................................................ 33
   3.3 Impacts on the wider community and rural communities ................................................................. 34

4. A Framework and Guidelines for Evaluation of Capacity Building Investments ............................... 36
   4.1 The Logical Framework approach .................................................................................................. 36
   4.2 Evaluation purpose ......................................................................................................................... 36
   4.3 Information requirements for capacity building evaluations ......................................................... 37
   4.4. Cost-benefit analysis ..................................................................................................................... 38
   4.5. Some guidelines for RDC evaluation activities ............................................................................. 39

Implications ............................................................................................................................................... 41
Tables

Table 1: Achievements of Rural Women’s Award recipients .................................................. 19
Table 2: HCC expenditure on capacity building programs .................................................... 21
Table 3: Summary of impact categories from RDC capacity building .................................... 30
Table 4: Categories of capacity investment with examples..................................................... 31
Table 5: Examples of data required for capacity building investments when applying the Logical Framework Approach ........................................................................................................... 37
Table 6: RDC steps in undertaking an evaluation of a capacity investment ................................. 39
Table 7: Evaluation steps in undertaking a qualitative evaluation of a capacity investment .... 40
Table 8: Steps in undertaking a cost-benefit analysis of a capacity investment ......................... 40

Figures

Figure 1: Generic logical framework ....................................................................................... 6
Figure 2: UNDP example of the logical framework ............................................................... 6
Figure 3: The ripple model .................................................................................................... 7
Executive Summary

What the report is about

Australian Rural Research and Development Corporations (RDCs) invest significant funding, singularly or jointly, in building leadership skills and research capacity for industry.

Capacity building for the RDCs is mostly concerned with addressing constraints that may be limiting the performance of their other investment, currently or in the future. Constraints may be associated with such issues as leadership resources, shortages of research and other skills, poor knowledge management and poor understanding and communication between groups.

This report presents a reference framework for consideration when an RDC contemplates evaluating one or more of their investments in capacity building activities such as leadership, training, awards and scholarships. The report identifies activities and methods that may be undertaken to qualitatively and/or quantitatively evaluate investments that have been made, or are being contemplated to be made, in a range of capacity building activities.

Who is the report targeted at?

The report is primarily targeted at the Australian Rural Research and Development Corporations however could be used for evaluating rural capacity building investments for other organisations, both public and private.

Where are the relevant industries located in Australia?

Capacity building investments for rural industries are singularly or jointly undertaken by RDCs across sectors. The relevant industries are thus located widely across Australia.

Background

Capacity can be defined as the ‘ability of individuals, organisations and societies to perform functions, solve problems and set and achieve objectives’ (UNDP, 2010).

Definitions of capacity building can vary with the institutions involved and the context in which they operate. The RDC coverage of capacity addressed by this report includes:

- Providing research training and support via scholarships, awards, conferences and travel.
- Providing leadership training and awards for industry associated personnel.
- Encouraging school students and University entrants to undertake tertiary courses relevant to primary industries.

RDCs also make investments in capacity building in the extension and adoption area; however, these investments, some of which are closely linked to the outputs of R&D investment, are not covered in this report.

Some RDCs have previously funded evaluation of capacity building investments. Some, but not all, of the associated evaluation reports have been used to help build the framework and guidelines presented in this report.

Aims/objectives

The objectives of the project were to:
• Develop an evaluation framework for reference when an RDC contemplates evaluating one or more of their investments in capacity building activities such as leadership, training, awards and scholarships.

• Identify activities that may be undertaken to qualitatively and/or qualitatively evaluate investments that have been made, or are being contemplated to be made, in a range of capacity building activities.

• Provide a report to RIRDC on the evaluation framework and possible/potential evaluation activities that may be used by the RDCs.

Methods used

1. Conduct a literature review on the various aspects of evaluating rural research capacity building that can be used to develop and populate the framework.

2. Review the RDC evaluations conducted by Agtrons Research and others in the past ten years, most of which have been targeted at awards, scholarships, leadership programs and skills enhancement.

3. Explore the logical framework approach to such investments in order to assist in building and organising evidence for evaluation purposes.

4. Assess qualitative evaluation versus quantitative approaches (for example, use of social cost-benefit analysis) and the circumstances where different approaches may be warranted.

5. Develop the framework and assemble the activities that can be undertaken to evaluate investments depending on the investment purpose, type and its context.

Implications for relevant stakeholders:

The report presents an evaluation framework and guidelines for RDCs for consideration when an RDC contemplates evaluating one or more of their investments in capacity building activities. If used appropriately the framework can assist in achieving better use of levy-payer resources for evaluating capacity building investments and assist with learning to make improved future investments.

Recommendations

No recommendations are made as part of this report.
Introduction

A framework for evaluating leadership and capacity investment was recognised by RIRDC management as being potentially valuable to the various Australian Rural Research and Development Corporations (RDCs). The RDCs invest significant funding, singularly or jointly, in building leadership skills and research capacity for industry. The term RDC is used generically here to include both statutory and industry owned corporations.

This report presents a reference framework for consideration when an RDC contemplates evaluating one or more of their investments in capacity building activities such as leadership, training, awards and scholarships. The report identifies activities and methods that may be undertaken to qualitatively and/or quantitatively evaluate investments that have been made, or are being contemplated to be made, in a range of capacity building activities. Some reference is made to evaluation material produced for individual RDCs in the past ten years. Where this material is not already in the public domain, gratitude is expressed to the RDCs for allowing this material to be referenced.

Capacity building, in one form or other, represents a significant proportion of the investment portfolio of most RDCs. Some RDCs use the term capability rather than capacity, but for the purposes of this framework, these terms are considered interchangeable.

Scope and definition of capacity building

Capacity building for the RDCs is mostly concerned with addressing constraints that may be limiting the performance of their other investment, currently or in the future. Constraints may be associated with such issues as leadership resources, shortages of research and other skills, poor knowledge management and poor understanding and communication between groups.

Capacity can be defined as the ‘ability of individuals, organisations and societies to perform functions, solve problems and set and achieve objectives’ (UNDP, 2010).

Definitions of capacity building can vary with the institutions involved and the context in which they operate. The RDC coverage of capacity support generally has addressed:

- Providing research training and support via scholarships, awards, conferences and travel.
- Providing leadership training and awards for industry associated personnel.
- Encouraging school students and University entrants to undertake tertiary courses relevant to primary industries.

Research capacity

Maintaining or building scientific capacity is a key requirement for efficient and effective R&D investment. Most RDCs address the maintenance of research capacity as a core area or a strategic priority. Specific disciplinary gaps identified are often addressed via the type of scholarships or fellowships offered. Building or maintaining specific capabilities is also addressed via components in RD&E projects.

Leadership capacity

As for research capacity, maintaining or strengthening industry leadership capacity has been regarded by the RDCs as an important contributor to delivery of efficient and effective RD&E as well as a driver of effective adaptation to change in rural industries and rural communities.

The management of RD&E funding for rural research requires significant input from those who pay the research levy and who use the findings of the ensuing research. This is particularly important in setting research strategies and priorities and assessing changes in project and program management as
the environment of an investment changes. Industry leadership is also important in ensuring industry policy is set to encourage productivity gains on farm and to seek out constraints in such areas as supply chain efficiencies and improving market access.

**Future capacity**

A third aspect of capacity building of interest to some RDCs is associated with the attraction of new human resources into tertiary training in agriculture and fisheries. This has been seen as required to counter the recent shortage of personnel for employment in a wide spectrum of primary industry support services such as technical, advisory and agribusiness areas.

**Extension**

Some extension activities and training courses can also be considered capacity building investments. For example, a major investment in extension by Meat and Livestock Australia (MLA) is via its offering of practical learning opportunities to help producers gain knowledge and develop skills necessary to improve their livestock enterprises (EDGEnetwork®). Other capacity building initiatives are linked closely to R&D investments and could be considered part of RD&E initiatives.

The framework used in the current report, however, does not include extension material, training courses and building specific skills for producers and consultants in the capacity building area. While these could be included, it is considered that they fit more neatly into the evaluation of RD&E investment and could be better monitored and evaluated along with such investment.

**Evaluation of capacity investment**

At least prior to 2007, evaluation of capacity investments by the RDCs has been based on the usual evaluation process of formulating evaluation questions driven by accountability and based implicitly on such dimensions of appropriateness, effectiveness and efficiency, with less effort given to economic evaluation of impacts. This approach certainly needed to capture information on impacts but the key focus was often on how the existing investment could be improved in future or on identifying new investments that could be candidates for future support.

Since 2007 there has been an increasing focus by government and the RDCs on the economic evaluation of past investment, largely for accountability purposes. Economic evaluation of RD&E investment has become a more common practice for most of the Australian RDCs for both accountability and portfolio management reasons. Currently this is potentially changing to accommodate more ex ante or prospective economic evaluation of potential investments.

Evaluation of investment in capacity building, particularly in meaningful and in quantitative terms, is more challenging than evaluation of the more accepted RD&E outputs such as, for example, a new variety of wheat, an improved management system, an extension program, or alleviating a market access constraint. Hence, in the main, less attention has been given to economic evaluation of capacity investments as defined in this report.

The material outlined in this report has been developed from a literature review on the topic followed by some examples of evaluation of various RDC investments in capacity building areas over the past 10 years. The end point is the development of a succinct framework and set of guidelines that may be used by RDCs when contemplating, planning, or undertaking an evaluation of a capacity investment.
Objectives

The objectives of the project were to:

- Develop an evaluation framework for reference when an RDC contemplates evaluating one or more of their investments in capacity building activities such as leadership, training, awards and scholarships.

- Identify activities that may be undertaken to qualitatively and/or qualitatively evaluate investments that have been made, or are being contemplated to be made, in a range of capacity building activities.

- Provide a report to RIRDC on the evaluation framework and possible/potential evaluation activities that may be used by the RDCs.
Methods

The methods for undertaking this project was as follows:

1. Conduct a literature review on the various aspects of evaluating rural research capacity building that can be used to develop and populate the framework.

2. Review the RDC evaluations conducted by Agtrans Research and others in the past ten years, most of which have been targeted at awards, scholarships, leadership programs and skills enhancement.

3. Explore the logical framework approach to such investments in order to assist in building and organising evidence for evaluation purposes.

4. Assess qualitative evaluation versus quantitative approaches (for example, use of social cost-benefit analysis) and the circumstances where different approaches may be warranted.

5. Develop the framework and assemble the activities that can be undertaken to evaluate investments depending on the investment purpose, type and its context.
1. General Literature Review on Evaluation of Capacity Building Investments

1.1 Introduction

This literature review covers the different approaches used to evaluate investments in capacity building. Capacity building in this instance can refer to three areas relevant to RDCs and similar bodies: leadership, industry capacity and research capacity. The scope of the literature reviewed is within these three capacity building areas and focuses on common themes and approaches taken to measure impacts of these investments. The literature reviewed was selected primarily on its relevance to RDCs for provision of R&D or public goods and within or related to the agricultural sector. Where considered relevant, approaches used outside of these sectors have been included. The literature review covers four themes: purpose of evaluation; logic and frameworks used on which to base a capacity building evaluation; tools for measuring impact in an evaluation; and common challenges and difficulties highlighted across the literature for evaluating capacity building investments.

1.2 Purpose of evaluation

A key starting point with any evaluation is the purpose for which it is being undertaken. Gordon and Chadwick (2007) identified that the purpose of an evaluation will have bearing on who is involved, their responsibilities and the level of investment in the evaluation. Hailey and James (2003) also suggest that often systems for conducting impact assessments are hindered by confusion regarding objectives and purpose. Across the literature, four common themes for purpose of evaluation are summarised as follows:

*Accountability*
An evaluation for the purposes of accountability demonstrates to stakeholders such as donors or levy payers that investments are making impacts or returning value for money.

*Learning*
An evaluation can be conducted to inform what can be improved in an investment. This form of evaluation can highlight successes and constraints of an investment and influence reform in policies, strategies or governing practices to strengthen similar investments in the future.

*Expectations and Monitoring*
This type of evaluation is conducted to demonstrate the expected returns on a prospective investment and identify key variables for monitoring progress in future.

*Communication*
An evaluation can demonstrate the legacy that an investment has had and communicate it to motivate adoption of similar processes or outputs and motivate similar investments to occur.

1.3 Logic and frameworks of capacity building evaluation

A majority of the literature uses variations on the logical framework approach (tracing pathways along inputs, outputs, outcomes and impact) in capacity evaluation. The logical framework approach (logframe) to planning and evaluation was originally developed by the United States Department of Defence, and adopted by the United States Agency for International Development in the late 1960s. It has since been applied and modified by many bilateral donors, including Germany, the United Kingdom, the European Union, Canada, and Australia (Odame, 2001). In a simple form, the logical framework can be expressed as in Figure 1. An example of the logical framework in a development context is provided by the United Nations Development Programme (2009) in Figure 2.
Figure 1: Generic logical framework

Figure 2: UNDP example of the logical framework

Source: UNDP, 2009

As Figure 2 shows, planning a project is likely to begin from a top-down approach (beginning at impact and working back to inputs). However implementation, monitoring and evaluation commonly begin from a bottom up approach (beginning with inputs and activities).

Gordon and Chadwick (2007) use the logical framework as the first of three key steps for an evaluation framework:

1. Mapping inputs to impacts – logic of inputs to impacts (analytical framework)
2. Operationalising the framework – measuring changes along the pathway
3. Estimating impacts – tools to estimate benefits/impacts, evidence to support impacts

Simister and Smith (2010) suggest that the logical framework can be approached in three different ways; the bottom-up method, the middle-up and down method and the top-down method. The bottom-up method begins with defining inputs, objectives and outputs from the beginning and tracing change up to the outcome and impact levels. This approach, while common, has its shortfalls when measuring effects over time, especially when a number of different types of capacity building investments have been made at different times.
The middle up and down method begins at measuring change at the outcome level at different points in time. Once changes are recognised at this level they can be traced backwards to investigate what activities might have caused the change and forwards to see impacts that have eventuated or may eventuate in the future. This approach has advantages when the investment in capacity is ongoing or different organisations contribute to capacity building. However, this does not allow for a pathway to be followed for an individual capacity building input, but rather measures capacity at a higher level and is perhaps most appropriate for an organisation-wide evaluation.

The top-down method measures change at an impact level, then working backwards traces what might have contributed to the change. It is even less likely to demonstrate the impact of an individual capacity building activity/input than the middle up and down approach and is complicated by the number of other influences that may have created a change at the impact level. In addition, a hypothesis must be made on the types of impacts that relevant capacity building activities have for an organisation.

The ripple model is often used to highlight change brought about by capacity building investments (Simister and Smith, 2010; Hailey and James, 2003). Figure 3 shows the logic behind the ripple model. A capacity building input contributes to change at the individual, then organisational levels and extending to wider stakeholders and community. The ripple model shows that the focus of capacity evaluation can occur at different levels and that change at one level can ripple out to bring about change at another level.

![Figure 3: The ripple model](source: Hailey and James, 2003)

The Boesen and Therkildsen (2003) analytical framework begins the evaluation process at changes at the output level and takes a stepwise approach to identify causal links between output changes and the factors that may affect that change. In this instance, outputs are defined as the outputs from an organisation, e.g. policy proposals or vaccinations. This example highlights how terminology and definitions can vary between different approaches.

Empirical facts about the changes of outputs and the factors are established before the causes of changes are identified and before the intentions of the program/project’s objectives are considered.
Assumptions are then made about the capacity building input relative to other factors that may have caused the change. The approach then seeks to integrate the political realities and constraints for capacity development. The process follows four steps:

1) Organise the evaluation process

Includes organising who should participate, identifying stakeholders, purpose, timing etc. and other logistics.

2) Identify what has changed

Identification of what has changed in terms of inputs, outputs and outcomes, and also in terms of factors that could influence change beyond the capacity investment.

3) Identify how changes have occurred

Analyse the importance of capacity development inputs relative to other internal and external factors that have influenced the overall capacity impact.

4) Identify why changes have occurred and what can be learned

Attribute the degree to which impact can be attributed back to the capacity building input being assessed.

Stiefelmeier et al (2013) use outcome mapping in the logical framework context by identifying and valuing inputs, clarifying outputs and describing outcomes. This logic is then used to measure a SROI (Social Return on Investment) which is explained later in the quantitative section of this review. Once at the stage of describing outcomes an economic proxy of the value of the outcome is generated.

1.4 Tools for evaluation: quantitative and qualitative measures

The following sections give overviews of qualitative and quantitative tools used to evaluate capacity building investments. The need for a combination of qualitative and quantitative methods is stressed in multiple studies (Templeton, 2009; Hailey and James, 2003; Simister and Smith, 2010). Collecting evidence of impact qualitatively is necessary to inform and validate any quantitative analysis. In addition, benefits arising from capacity building can be intangible, so qualitative evidence of such impacts is necessary.

Qualitative

Assembling qualitative evidence to demonstrate impact is the first logical step to demonstrate the impacts of the capacity investments. Some of the key tools for demonstrating impact qualitatively are as follows:

Planning tools
The simplest of methods to track progress in capacity building is to set objectives and indicators that map the expected progress of a capacity building investment. This can be carried out using the logical framework of mapping the pathway from inputs and activities to impacts. Developing a Monitoring and Evaluation (M&E) plan is one approach that can be used.

Most significant stories of change (MSC)
The process of MSC involves collecting stories of significant change from the level of where impact is felt. The most significant stories are systematically selected by a panel of designated stakeholders, authorities or staff involved at different stages in the program according to determined criteria within pre-defined domains. In-depth discussion are held on the value of the reported changes. The process of identifying changes focuses attention on impact (Davies and Dart, 2005).
Case studies
An alternative to MSC can involve randomly sampling across the beneficiaries of the capacity building investment (organisations or individuals) and conducting an in-depth case study (Simister and Smith, 2010). A case study can not only demonstrate the results of building capacity, but also set the scene regarding context and processes for achieving those results. Variations in case studies mean that they cannot be strictly compared (Gordon and Chadwick, 2007). However Simister and Smith (2010) suggest given a sufficient number of stories are chosen and coverage of selected case studies is wide, extrapolation of findings could allow for wider and general conclusions to be developed.

Questionnaires and surveys
Questionnaires and surveys of beneficiaries of a capacity building investment are tools used often in monitoring and evaluation. Collection of data can allow for conclusions to be drawn about a program as a whole, given correct consideration of issues such as sample size and selection bias.

Self-assessment
Self-assessment allows for an opportunity to learn from beneficiaries of capacity investments and also provides realistic support for making linkages to impact. Hailey and James (2003) suggested that recognition was growing of the fact that findings from an impact assessment of capacity building would not be valid unless there is some form of self-evaluatory process involved. However there are clear drawbacks to self-assessment, such as bias, subjectivity of participants and issues arising with organisations conducting their own assessments. A triangulation of results is a method that can be used to overcome some of these difficulties. This involves cross checking and validating results with other methods, data or external evaluations by other organisations and consultancies (Hailey and James, 2003; Gordon and Chadwick, 2007; Simister and Smith, 2010).

Interviews and focus group discussions/workshops
Another approach for collection of evidence of impact is direct interviews, either individually or in groups with stakeholders, organisational heads and individuals directly involved in the capacity building activity. Similarly focus group discussions or workshops can allow for debate and ideas to be circulated regarding impacts and even develop measures (i.e. generate scores if such a system for evaluation is adopted) and means for collecting further data if the process is ongoing (Hailey and James, 2003).

Organisational assessment (OA) (sometimes referred to organisational capacity assessment tools (OCATs)) or Scoring Models
OAs or OCATs are designed to assess and plan capacity development. OAs can be designed by identifying indicators in different capacity areas and developing a ranking or rating system by which the different indicators are scored. The scores can be developed through surveys, discussions or some like method to reach consensus and then revisited over time to measure change (Simister and Smith, 2010). These tools overlap somewhat with quantitative approaches. An example of this overlap is provided in Phillips and Schmidt (2004) ‘Leadership Scorecard’ approach, explored later.

Quantitative
The following section provides summaries of some quantitative approaches used to evaluate capacity investments. Some studies mentioned are carried out at the firm or commercial organisation level. The methods used in these studies are less applicable to the RDC context; however, they demonstrate the differences and difficulties in applying a quantitative approach even at a firm level where variables can be monitored more closely and there are fewer external influencing factors. More constraints apply to RDCs, where such variables are less easily monitored.

Common quantitative methods viewed in the literature include use of cost-benefit analysis (CBA) or return on investment analysis (ROI). The terms are used interchangeably. The method generates an expected return from every dollar invested by summing streams of benefits and costs (discounted to account for the time value of money) and then deriving investment criteria such as Net Present Value, Benefit-Cost Ratio, and Internal Rate of Return. ROI and CBA approaches involve putting monetary
values on benefits from capacity building and this is where difficulties can lie. Some approaches used follow:

- Avolio et al. (2010) measured leadership development intervention using a utility analysis methodology to calculate an ROI. The method incorporates a monetary (dollarized) performance metric to measure the return on investment and suggests when such a metric is not available that 40% of an individual’s salary be used as a proxy for their additional value to the firm in terms of performance. A control group is incorporated from which to measure benefits (a group unexposed that has not undergone training or been exposed to the capacity building input). The method allows for evaluating leadership development intervention and takes into account the opportunity cost of attending the training. Such a method would be most applicable at an organisational level. Results from the analysis found an average ROI for top performers in a 3 day intervention ranged from 197%–200% (capped) as compared to 50%–87% for average performers.

- An approach reported by Rohs (2004) calls for utilising monetised indicators at the firm level (e.g. employee overtime, unit costs, product defects, absenteeism, increased competency levels) to generate a ROI from investment in capacity building. The specific example used in the study was employee turn-over rates before and after participation in the program as a measure. The analysis did not take into account that other factors could contribute to the lower turn-over rate seen after participation in the program. Benefits were estimated as a return of $2.86 for every $1 invested.

- Stiefelmeyer et al. (2013) used a SROI (social return on investment) approach to evaluate investment in the Canadian AALP (Advanced Agricultural Leadership Program). SROI is defined by Nicholls et al. (2012) as:

  “SROI measures change in ways that are relevant to the people or organisations that experience or contribute to it. It tells the story of how change is being created by measuring social, environmental and economic outcomes and uses monetary values to represent them. This enables a ratio of benefits to costs to be calculated.”

The approach is similar to cost-benefit analysis, only has significantly more emphasis on engaging stakeholders at every step of the analysis, thus can be more costly and time consuming. Stakeholders are involved from deciding what indicators to use for putting financial values on outcomes.

The SROI was estimated via two benefits; salary from career progression and improvement in community through the value of volunteer work. The salary benefit was measured through the change in the participants’ salaries or business revenues 2-10 years after involvement in AALP and an estimate of how much that value could be attributed to AALP. Attribution to AALP decreased with the number of years after graduation. The study assumed that 11 years after graduation, the effects of the program diminish to zero. The volunteering benefit was calculated by asking the number of hours of volunteering after participation in the program and using wage equivalents for volunteering hours. The results showed a return on investment of $1.25 for every dollar invested. The approach involved a survey that directly asked participants about salaries, perceived contribution of that salary from AALP involvement and volunteering hours.

- ACIAR’s impact assessment series has included a number of evaluations using cost-benefit analysis (Brennan and Quade, 2004; Gordon and Chadwick, 2007; Longmore et al, 2007 and Fisher and Gordon, 2008). Some of this work has applied to a specific area of research with a capacity component, for example Fisher and Gordon (2008) extended work done on the ACIAR project ‘Breeding and feeding pigs in Australia and Vietnam’ allowing for measurement of capacity benefits to occur on a cost share basis. The benefit-cost ratio was found to be 250:1 with an internal rate of return of 25%.

A similar method of sharing the benefits to a capacity building component from a wider technology or research area is used by Longmore et al (2007), resulting in a benefit-cost ratio of 100:1, and one of two case studies in Gordon and Chadwick (2007), resulting in a benefit-cost ratio of 13:1. The second
of Gordon and Chadwick’s (2007) case studies uses an approach to value capacity built by assuming that impacts were brought forward from the counterfactual scenario without the capacity building project. This evaluation gave a benefit-cost ratio of 28:1.

**Mixing Qualitative and Quantitative approaches**

The mixing of qualitative and quantitative approaches is considered to be ideal in effecting evaluation. Cost benefit-analyses of case studies based on individual projects or larger thematic programs can be a useful tool for analysing and communicating impacts (Chudleigh et al, 2006). A case study can effectively detail the logic behind usage and impact, in addition to demonstrating the net impacts of that use.

The TBL-ROI (triple bottom line return on investment) approach reported in Pearson et al (2012) is a similar method of combining qualitative and quantitative approaches. The TBL-ROI applies a quantitative approach through a cost-benefit analysis, as well as detailing the narrative behind the quantitative results incorporating environmental, social and economic benefits. The method allows for effective communication of evaluation results and goes some way to prevent the emphasis being mostly focused on numbers.

Phillips and Schmidt (2004) use combined qualitative and quantitative components in the ‘leadership scorecard’ approach. The analysis is conducted at five levels, the first four of which are measuring and constructing evidence for change at different levels that can be attributed back to a capacity building investment. The fifth level is calculated by a ROI.

- **Level 1 Reaction**, satisfaction and planned action – a measure of satisfaction of participants usually via a generic survey upon completion of the leadership training/program.

- **Level 2 Learning** – what the participants learned during the program. This could incorporate pass/fail measures if testing occurs and could occur during or at the end of the program.

- **Level 3 Application and implementation** – following up to assess whether participants applied what they learned on the job.

- **Level 4 Business impact** – a measure of the results achieved by the program, for example improvements in aspects of quality, costs and time. This could align with objectives of investing in the capacity building in the first place and the use of baseline measures developed to compare before and after scenarios.

- **Level 5 ROI analysis** – the ROI analysis will convert the level 4 measure into monetised dollar values. All values that can be monetised are included and other intangible benefits (e.g. Job satisfaction) expressed qualitatively.

The chain of impact traced from Level 1 to Level 5 gives some validation to the causal link created between the capacity building program and the benefits measured.

**1.5 Difficulties in capacity building evaluation**

One challenge of evaluating capacity building highlighted across the literature is the difficulty regarding attribution. Multiple and changing influences over time make for difficulties in identifying direct causal links between an investment and impact (Hailey and James, 2003).

Templeton (2009) provided some guidance for determining how much of a project’s benefits could be attributed to a capacity building component. Aside from when capacity is sufficient to have resulted in significant benefits, whereby full attribution can be given, two other cases are identified.
1) When the capacity built is considered to be neither necessary nor sufficient, but improves the impact of a project then attribution can be quantified by:

- **Bringing benefits forward** where the impact would have occurred anyway but increased capacity has made the impact occur sooner than otherwise would have been the case

- **Marginal gain approach**, where the capacity built increases the quality of changes made, thus increasing the size of impact by some margin

2) When the capacity built is necessary but not sufficient, attribution can be made by:

- **Cost share approach**, where the benefits are allocated to a capacity building investment based on the share of total investment costs

- **Relative-importance approach**, where a subjective assessment is made regarding the proportion of benefits allocated to a capacity building investment based on its importance relative to other components that contributed to impact

These methods for attribution apply mostly to cases where a capacity building investment is only one component of a larger investment. However it is not always possible to treat standalone capacity investments such as scholarships or leadership training in the same manner.

The ripple model (Figure 3 presented earlier) can explain graphically the concept of plausible association (Hailey and James, 2003), instead of direct attribution. The most direct change that a capacity building investment can bring about is at the individual level. The size and direction of this change brings about changes at wider levels such as at the organisation, industry, or community levels. Collecting evidence after making a plausible association between the capacity built and change is necessary to discern the significance and spread of the impact of a capacity investment.

The solution to the attribution problem was addressed by Stiefelmeyer et al. (2013) by asking alumni of a leadership program to assign a % of their career growth (as salary was the benefit quantified) that could be attributed to a capacity building program after participation. Alumni were from different graduation years and were asked to provide data in two year intervals up to ten years after graduation. Survey results showed that contributions of the program were the greatest directly after participation and diminished over time.

A challenge with applying any of the evaluation frameworks and tools explored in the previous sections of this review are constraints in time and budget to an organisation. It is apparent that thorough collection of data (extensive and longitudinal surveys, workshops, interviews) that would demonstrate outcomes and impacts qualitatively or be used to inform a quantitative analysis can become costly. Gordon and Chadwick (2007) suggest a general rule for the evaluation budget to be between 5-10% of the project/program. Pearson et al (2012) suggest 4% or less. The cost and extent to which a capacity investment is evaluated could really be seen as dependent on its purpose. For example, if for accountability reasons, enough should be spent to satisfy those stakeholders (contributors, levy-payers) to whom the project/program is accountable. However, it is logical to suggest that once sufficient and credible qualitative data are collected, the next step of progressing to some form of quantitative ROI analysis can be relatively easily informed and potentially validated by such data.
2. Review of Evaluation of Some RDC Capacity Investments

Most RDCs have capacity building programs that address issues such as leadership, understanding and communications within the industries for which the RDC is responsible, and the building of research capacity generally or in specific disciplinary areas. The following provides descriptions of some of the capacity building initiatives evaluated by the RDCs over the past ten or so years. The set of descriptions are limited to those undertaken by Agtrans Research and others that were found to be publicly available. However, there could be other evaluations (published or unpublished) that are unknown to the authors. Some emphasis is given in the review as to whether any cost-benefit analysis (CBA) was delivered within the evaluation. Where a CBA was carried out, the types of benefits valued and those defined only qualitatively were described.

2.1 Land and Water Australia (LWA)

Regional Capacity Building: Planning for Regional Resource use
A project funded by Land and Water Australia more than a decade ago (1997-2000) was evaluated in economic terms in 2003. The investment gave assistance to groups and individuals to appreciate the common natural resource management problems in the Central Highlands Region of Queensland. The idea was to build their own capacity to plan and negotiate solutions. The project established a Regional Coordination Committee that facilitated the sharing of information, act as a forum for reaching agreement across different interests in the region, and act as a conduit for effective communication with the rest of the regional community. It is of interest to note that the Central Highlands Regional Resources Use Planning Cooperative (CHRRUP) is still operating in 2014.

With regard to quantitative evaluation, it was recognised that not all benefits identified could be valued. A cost-benefit analysis was carried out that valued three benefits:

- Saved engagement costs to government and the community sectors
- Less wastage in public NRM resources in the region
- An increased capacity of people in the region to plan and negotiate

How each of these benefits was valued and the CBA investment criteria produced are reported in LWA (2007).

Regional Capacity Building: Planning Irrigation Futures
This investment addressed the development of a shared vision for the future of irrigation in the Goulburn Broken catchment. The project was characterised by wide stakeholder engagement, scenario planning, development of robust strategies and tools and processes for future planning of irrigation water supply infrastructure, businesses and industries, catchment management and individuals.

The process itself had some impacts on the capacity of those involved and hence the broadening of horizons implicit in the process was likely to be embedded in many future decisions to be made by regional institutions and others in the particular community. These more informed decisions were likely to produce economic, environmental and social benefits. The recognition of uncertainty was likely to be reflected in more robust or more flexible strategies that resulted in a more efficient allocation of resources. Also, improved preparedness for some of the common features of the scenarios was likely to improve adaptation processes at lower costs as they were developed in the regional community.

Most of the economic benefits from this investment (Agtrans Research, 2008) were envisaged to be captured by changes in strategies of local government, the Goulburn Broken Catchment Management
Authority and Goulburn Murray Water. Modified strategies included those associated with investment allocations, farm planning, and land use planning at local government level. Environmental and social benefits were also likely to be associated with these changes.

A cost-benefit analysis for the total investment in the project was carried out with key benefit assumptions and attribution parameters referring to economic impacts driven by:

- A higher rate of return on planned expenditure
- Savings in surface and subsurface drainage program costs
- Reduction in proportion of total agricultural production value negatively affected by land use planning changes

2.2 RIRDC

In 2006/07 Agtrans Research made input into developing RIRDC’s new Five Year Plan for the Human Capital, Communications & Information Systems Program (HCC). As part of this input, Agtrans carried out some reviews of the education, training and leadership components of the HCC. Components addressed included:

- Postgraduate scholarships
- Australian Rural Leadership Program
- Nuffield scholarships
- Rural Women’s Award
- Heywire

Postgraduate Scholarships

Key questions addressed in relation to the RIRDC postgraduate scholarship support included:

- What has been the disciplinary and industry balance of RIRDC scholarship holders?
- Has the RIRDC scholarship been rewarding for the individual?
- Are there attributes of the RIRDC scholarships that can be improved?
- Do the majority of RIRDC scholarship holders after their graduation gain employment within RIRDC industries and so contribute to capacity building for RIRDC industries, or move to other fields of research either within agriculture or outside of it?

In order to address these questions, names of RIRDC scholarship holders, their thesis topic, and the institutions at which they studied were compiled. A survey of scholarship holders was then carried out. The sample referred to those students who had completed (or nearly completed their studies) over the past five years (2002-2006). The population falling into this category numbered 22. Attempts were made to contact 13 of the 22 students; contact details for the others could not be found. Six responses from the 13 were obtained.

Some of the questions posed were:

- How has your participation in the RIRDC postgraduate program helped you in your current occupation and employment? Please provide specific examples if possible.
- What are your opinions on the level of support (both financial and other) provided by RIRDC for your postgraduate studies, compared to other support options that may have been available to you?
In your opinion, what are the principal limitations of the RIRDC postgraduate scholarship program and do you have any ideas for its improvement?

Conclusions emerging from the brief survey were:

- The respondents have generally remained in the same disciplinary area, at least in the short term.
- There appeared a heavy concentration of scholarship holders in the poultry industry and in agroforestry over this period; very few scholarships were funded in the new and emerging industries areas.
- The RIRDC scholarship scheme is operating well with a high level of satisfaction manifest among past holders.
- The level of RIRDC remuneration associated with RIRDC scholarships appeared satisfactory and is comparable with the lower stipends of University Scholarships rather than the higher level of stipend provided in scholarships from some other RDCs.
- There were issues raised about extensions to the three year scholarship period.
- A potential improvement mooted was for RIRDC to support a higher level of networking and general support for students through conferences and workshops, with the main aim of integration into industries, professional skilling, job seeking, and preparation for a future career.
- The current scholarship scheme of attracting good students and supporting their higher degrees apparently is targeted to RIRDC industries to some degree. This seems to be working satisfactorily and is building capacity in RIRDC industries.

Some alternative capacity building strategies through scholarships that could be considered further included:

- The idea of the RDCs pooling their scholarship support resources to be administered by an RDC committee needed further investigation. This strategy may carry more support if there is already a high degree of crossover in post scholarship careers. However, the existence of a high degree of crossovers is not supported by the small sample of RIRDC scholarship holders interviewed.
- Ensure that scholarship holders are working on key constraints already identified within new and emerging industries, or in multi-industry areas, rather than topics that are just suitable for a PhD. New and emerging industries in particular provide fertile ground for new knowledge discovery, particularly in genetics, pest and disease resistance etc.

**Australian Rural Leadership Program**

The Australian Rural Leadership Program (ARLP) was established in 1992 as a RIRDC initiative. A Foundation was established to manage the program. The extent of RIRDC’s then current involvement was to fund two scholarships per year for individuals to participate in the ARLP (total annual cost was $110,000).

The objective of the ARLP was to “Improve the competitiveness and profitability of rural industries in an international context, for the benefit of all Australia, through the development of highly capable leaders in rural industries and the support community”.

Each course lasted two years and involved thirty participants from around Australia. There were eight sessions in each course, each of about 5 to 13 days duration, plus an overseas study tour. The sessions were based around participation, interaction and debate, rather than lecture style presentations.

RIRDC commissioned an external review of the ARLP in 1996 (RIRDC, 2007). At this time only the first course had been completed, and the second course was near completion. The results of that review
were that the ARLP was performing well and that participants were very satisfied with the program. Some recommendations for changes were made and these were considered and taken up by the ARLP where appropriate. In addition, the ARLP employed an external consultant to monitor leadership behaviour before, during and after the course for the first three courses. This was undertaken by asking 5 peers of each participant to fill out questionnaires about the leadership behaviour of the participants before, during and after involvement in the course. The results of these surveys showed that individuals did improve, however the implications of the survey results were not considered of sufficient significance to continue with the process.

Another independent review of the ARLP was completed by consultants in 2003 (Reed & Reed, 2003). This review was based on a written survey of all past ARLP graduates and had a response rate of 49%. It found that:

- Eighty-one percent of respondents rated the overall performance of the program as excellent (38%) or very good (43%).
- Only 23% of respondents provided a rating of excellent or very good for the access to support networks after the program.

The conclusions of this review were:

- Adequate resourcing and the ability to continue to attract high calibre presenters were both critical factors to the success of the program.
- The network of past students could provide a vehicle whereby graduates are able to continue their learning and enhance their mentoring skills through practical experience and formal opportunities.
- The inclusion of a project could offer many benefits such as providing participants with the opportunity to work in their area of interest and providing a resource to the community, sponsors and supporters.
- Some form of critical program assessment was desirable.
- It was important to ensure that the program was equally accessible to women.

Interestingly, the survey also found that:

- Respondents’ current employment positions showed a considerable change from the positions held prior to undertaking the program, with respondents less likely to be working in farming and committee roles and more likely to be holding senior management positions.
- After undertaking the program, participation rates at local, regional and state levels decreased while national and international participation rates increased.

A review of the value of the ARLP to the sugar industry was carried out by SRDC and it showed that many of the intended outputs had been achieved with respect to the eleven sugar industry participants. Feedback was received from all ten graduates who had completed the course and all were very positive about the impact that the ARLP has had on their personal and professional development.

Agtrans carried out a brief review of the program for RIRDC in 2006. As of 2006 there were eight individuals supported by RIRDC who had completed the program since 1998, however contact details for only six of these individuals were found. A survey was conducted of the six ARLP graduates sponsored by RIRDC who could be contacted. Of those six individuals, three responded to the survey.

Respondents to the survey indicated that the course has been of great value to their occupations, and to community groups. Highlighted was the importance of not only leading from the front, but ensuring those you are leading are coming with you. Conflict resolution was also highlighted as a key skill developed from participation in the program. Respondents credited the program with contributing to a foundation for learning and growth, based on understanding how they interact, lead and learn.
One concern regarding the program was the importance of choosing the most appropriate candidates for the course in order to ensure maximum outcomes from participation. For example, value for money may not be achieved by the participation of an individual who already has adequate leadership skills and holds a position of leadership in a rural industry or community. However, it is equally important not to choose those who have little natural capital in terms of leadership skills. An appropriate balance is required to ensure that the chosen candidate is someone with a position where they will have the ability to grow professionally and rise to a position of leadership where they can make a difference.

Also of concern, and difficult to quantify, are the distribution of benefits from the program to individuals, businesses, industries, community groups, and communities. It is hypothesised that the majority of benefits are probably private in nature, and are captured by the individuals who undertake the program, and the specific businesses or groups in which they are closely involved. However, there are indications that there are also significant spill over benefits to the industries and communities in which these individuals are involved. For example, improved leadership capabilities of an individual will in some circumstances lead to an improved performance of an industry or community organisation, which will in turn lead to benefits to that community or industry. This is an example of the ripple effect described earlier.

The question was asked whether the significant funds spent by RIRDC on sponsoring one or two individuals per year to participate in the ARLP would yield a greater benefit if distributed among a larger number of individuals or groups. The potential for an improved public benefit would be dependent on the quality of the outcome from the alternative programs supported.

**Nuffield Scholarships**

This brief review was a desktop review only. The Nuffield Scholarship website identifies the benefits of the scholarship as:

- A high percentage of Scholars have gone onto a range of senior positions.
- Former Scholars in Australian and other countries have become Federal and State Ministers and Politicians, and Chairmen and members of national and regional commodity marketing boards.
- Dozens of Scholars have made a significant impact at regional and local levels, in community affairs and in farm management techniques.
- Other Scholars have had careers as advisers and managers in their own countries and in third world countries.
- Nuffield Scholars all attribute a proportion of the responsibility for their later career success to the Scholarship and the continuing friendship and associations that followed.

The Nuffield Scholars sponsored by RIRDC since 2002 had included three in the areas of new and emerging industries, and two in the rice industry.

**Rural Women’s Award**

The Rural Women’s Award is open to women from agriculture, fisheries and forestry production, food processing, community development and natural resource management. It is awarded not only for reward for previous innovation or contribution, but also to provide support for women to implement their vision and develop their skills. The Award was reviewed in January 2004 when it was in its fifth year. At that stage there had been 74 recipients.

The review of the Award in 2004 (Bessey, 2004) interviewed past winners, finalists and nominees. The review concluded that the impacts of the award included:

- Awareness by industry of the individual entrants, with flow on effects for winners in terms of an increase in their credibility and recognition among others in the industry. It meant they
were being asked to contribute more often, both in their local areas and in other sectors and regions.

- Increased participation and more confident participation by finalists.
- Increased contacts and significantly developed networks.
- Increased contacts with State and Australian government departments and agencies such as Austrade.
- Perception that other women would be encouraged by seeing one of their peers awarded.
- 50% of entrants said the Award had had a “great impact” on their personal skills, and 38% said it had had “some impact”. Winners reported more impact than finalists. Impact seemed to be declining slightly over the first three years. It was suggested that this might be because entrants are highly skilled and have less scope to improve their skills.
- Winners said their public speaking and presentation skills had improved markedly as had their personal confidence.
- 52% of entrants said the award had had a “great impact” on their project or business (95% of winners, 23% of finalists).
- 32% of entrants said “my business has improved markedly since the Award”, and 38% said “my business has improved slightly since the Award”.
- Innovation resulted from winners feeling confident enough and having strong enough contacts to promote and progress an idea.
- 46% of attendees felt that the National Leadership Seminar (no longer run) was “very useful”. The main benefit cited was the opportunity to network with other women. Value of networking was linked to related industries, and gathering information on problems and similar situations. Also a reduction in the feeling of isolation and an increase in confidence were reported.
- Media skills were noted as a specific skill gained.
- Some burden from the media coverage and time demands for winners – doing speeches and presentations etc. takes them away from their farms and jobs.
- Some spin-offs to local businesses where the winner might be connected to tourism.

Industry representatives were also interviewed as part of the 2004 evaluation. They thought the purpose of the award was to recognise past achievement rather than encourage future innovation. Some also criticised the award in that it only recognised women in smaller industries. Stakeholders such as RIRDC and DAFF were also interviewed and saw benefits for themselves due to contact with rural women, and increased understanding of the issues facing women and the types of activities they undertake.

There had been some debate over the size of the bursary and number of recipients. Some felt that the size of the bursary could be reduced, so that there could be more winners in order to better achieve the State organisations’ objectives of making multiple contacts in their States. However others felt that the calibre of entrants would be reduced by reducing the bursary amount. Some felt having too many winners or runners up makes the promotion of the women too complicated and fragmented. The bursary for the winner is now $10,000.

The additional prize of attending the Directors’ course is seen as valuable by participants. However there was some discussion in the review of allowing winners to choose different training courses suited to their individual needs. However it was recognised that one of the benefits to DAFF of the program is participants networking with each other, and different training would negate that.
The review reported that the media coverage of the Award was quite good but tended to focus attention on what the winners had achieved rather than focusing on what they would be able to achieve as a result of the award (Bessey, 2004). The review concluded that there was still a need to maintain the award, as a barrier to women participating in leadership positions is confidence, driven in part by a lack of successful and motivating role models (Bessey, 2004).

Table 1 presents a summary of the achievements of the Award recipients. The achievements/appointments refer to those both before and after receiving the award.

**Table 1: Achievements of Rural Women's Award recipients**

<table>
<thead>
<tr>
<th>Appointments/Achievements</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member of the Order of Australia</td>
<td>1</td>
</tr>
<tr>
<td>Medal of the Order of Australia</td>
<td>2</td>
</tr>
<tr>
<td>Federal Government Inquiries/Advisory Councils</td>
<td>7</td>
</tr>
<tr>
<td>Prime Ministerial Reviews</td>
<td>1</td>
</tr>
<tr>
<td>Research &amp; Development Corporation Boards</td>
<td>1</td>
</tr>
<tr>
<td>Corporation Boards</td>
<td>1</td>
</tr>
<tr>
<td>Industry Organisation Boards (national)</td>
<td>10</td>
</tr>
<tr>
<td>Industry Inquiries/Advisory Councils</td>
<td>4</td>
</tr>
<tr>
<td>Premiers Reviews/Advisory Councils</td>
<td>2</td>
</tr>
<tr>
<td>Government Inquiries/Advisory Councils/Boards (State)</td>
<td>25</td>
</tr>
<tr>
<td>Industry Organisation Boards</td>
<td>9</td>
</tr>
<tr>
<td>Agricultural Advisory Boards (State)</td>
<td>5</td>
</tr>
<tr>
<td>Tertiary Advisory Boards (State)</td>
<td>4</td>
</tr>
<tr>
<td>Community Boards/Committees</td>
<td>20</td>
</tr>
<tr>
<td>Rural Women’s Organisations (National)</td>
<td>5</td>
</tr>
<tr>
<td>Rural Women’s Organisations (State)</td>
<td>5</td>
</tr>
<tr>
<td>Rural Leadership Programs</td>
<td>6</td>
</tr>
<tr>
<td>AICD Graduates</td>
<td>35</td>
</tr>
<tr>
<td>MBA Graduates</td>
<td>3</td>
</tr>
<tr>
<td>Further Education</td>
<td>3</td>
</tr>
<tr>
<td>Centenary Medals</td>
<td>14</td>
</tr>
<tr>
<td>Leadership &amp; Business Awards</td>
<td>19</td>
</tr>
</tbody>
</table>

**Heywire**

The Heywire program was developed by the ABC in 1997. Financial assistance was provided by the Department of Transport and Regional Services, RIRDC, the Australian Sports Commission and Outward Bound Australia. Its aim was to give rural youth a voice in their communities, and to give all of Australia some insight to issues, concerns and ideas that are important to youth in rural, regional and remote Australia.
The program encouraged rural and regionally-based young people from throughout Australia to submit a short story to their local ABC radio station, expressing their views about regional youth issues and what it is like to live in rural Australia. It is open to rural Australians aged 16-22 years. One story is chosen for the Heywire Rural Youth radio competition from each non-metropolitan ABC local radio region. Each winner’s story is produced as a radio feature to be broadcast on national ABC radio. Several months later as a second part of their prize, each winner, along with all the other winners, attends a five day Heywire Youth Issues Forum in Canberra hosted by the ABC. The forum is designed to give the participants leadership insights, knowledge and skills through varied experiences, presentations and activities. One day is spent at Parliament House, where participants meet their local member and are introduced to the mechanisms of governance.

RIRDC commissioned a review of the Heywire program in 2003 (McKenzie and James, 2003). The review found that the Forum offers participants the chance to develop networks and be exposed to role models and community leaders. The program also provides opportunity for young people to think objectively about their environment, articulate issues and communicate to a large audience the challenges, concerns, ideas and what it is like to be a young person in rural, regional and remote Australia. In addition, it provides tools and skills to enhance community identity.

An analysis of other youth programs was undertaken as part of the 2003 review to determine if Heywire was filling a particular gap. It found that there were quite a few youth leadership programs, but Heywire’s uniqueness is that it is only open to rural people, and that is an opportunity for them to voice their opinion rather than need to demonstrate already established leadership skills.

The review found that some participants had gone on to participate in or initiate activities to enhance young people’s presence in their local community and this often included working with the local council or shire. Very few participants were still living in the communities they represented at the time of participating as they had moved to larger regional centres or capital cities to further their education and/or work opportunities. Many felt they would not return to rural areas in the short-term because of limited opportunities, but would like to return eventually. Therefore the skills, encouragement and enthusiasm for community development generated by participating in the Heywire program cannot easily be translated into action in the short or medium term when the participants are no longer living in their communities.

Future Directions for Education and Training
This brief review and surveys for RIRDC in 2006 found that there were clearly significant benefits from RIRDC’s support of these types of capacity building programs. In many cases however the benefits appeared to be predominantly to the individuals supported. It is not clear to what extent the ‘multiplier’ or ripple effect of this support provides benefits to industries and communities. The evaluation of the impact of such programs is therefore difficult as it is hard to obtain objective evidence or measurements of the impacts of such programs, particularly information that is appropriate for indicating if one area of capacity building support provides greater benefit or cost effectiveness than any other form of support. Or, in fact, whether such support would be better spent on research and development.

It was recommended that in the future a more strategic approach be taken to awarding scholarships and support for leadership and training programs. For example, the selection of PhD candidates had largely been in areas relating to the Established Industries Programs. Assuming that the investment in all scholarship candidates reviewed came from HCC funds, it may have been more appropriate for Established Industry Programs to fund their own PhD candidates, and for the HCC sponsored PhD candidates to align more closely with new and emerging industries or multi-industry issues.

Such a strategic approach could also apply to awarding scholarships for participation in the Nuffield and ARLP initiatives. It might be appropriate for a needs analysis to be carried out to determine what the leadership gaps are with respect to RIRDC’s areas of interest. For example are there gaps in the leadership abilities of scientists, industry groups, farmer groups, administrators, board members etc. Perhaps an initial focus for future support in this area could be on institutions within RIRDC industries.
that have been identified as requiring support, and where a lack of leadership or organisation is a significant factor impeding the growth of the industry, and therefore reducing the potential benefits from RIRDC-funded research.

With respect to the Rural Women’s Award, there is no doubt that it has been of great value, both to the individual participants and with respect to raising the profile of rural women across Australia. In some circumstances there has also been significant benefit to the communities/industries in which the women operate. However, the question could be asked whether, after a total investment of more than $1.0 million, the original objectives of the program have now been fulfilled, and whether there is now a more pressing social gap towards which RIRDC’s resources could be directed. Options would include scaling down the program, or involving more sponsors so that RIRDC’s financial responsibility could be reduced.

The resources allocated to these programs over 2001/02 to 2005/06 are presented in Table 2. This shows that approximately 43% of the total HCC budget has been allocated to these capacity programs over the past five years. There is a trend of increasing resources being committed to the programs, particularly in terms of the percentage of the HCC total budget, which had declined in the last two years of this period.

Table 2: HCC expenditure on capacity building programs

<table>
<thead>
<tr>
<th>Program</th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate Scholarships ($)</td>
<td>159,897</td>
<td>186,870</td>
<td>201,247</td>
<td>201,549</td>
<td>156,987</td>
<td>906,550</td>
</tr>
<tr>
<td>ARLP ($)</td>
<td>0</td>
<td>89,000</td>
<td>0</td>
<td>92,000</td>
<td>92,000</td>
<td>273,000</td>
</tr>
<tr>
<td>Nuffield ($)</td>
<td>0</td>
<td>0</td>
<td>20,000</td>
<td>22,500</td>
<td>30,000</td>
<td>72,500</td>
</tr>
<tr>
<td>Women’s Award ($)</td>
<td>235,400</td>
<td>185,000</td>
<td>199,797</td>
<td>219,293</td>
<td>288,644</td>
<td>1,128,134</td>
</tr>
<tr>
<td>Heywire ($)</td>
<td>44,100</td>
<td>50,000</td>
<td>10,000</td>
<td>50,000</td>
<td>40,000</td>
<td>194,100</td>
</tr>
<tr>
<td>Total ($)</td>
<td>439,397</td>
<td>510,870</td>
<td>431,044</td>
<td>585,342</td>
<td>607,631</td>
<td>2,574,284</td>
</tr>
<tr>
<td>Total HCC expenditure ($)</td>
<td>1,321,262</td>
<td>1,268,792</td>
<td>1,320,349</td>
<td>1,114,950</td>
<td>982,246</td>
<td>6,007,599</td>
</tr>
<tr>
<td>Expenditure on Capacity Building as a % of Total HCC Expenditure</td>
<td>33.3</td>
<td>40.3</td>
<td>32.6</td>
<td>52.5</td>
<td>61.9</td>
<td>42.9</td>
</tr>
</tbody>
</table>

As highlighted in the ARLP discussion earlier, the distribution of benefits from supporting individuals to participate in the above programs is difficult to quantify. The benefits are likely to accrue to the individuals sponsored and the businesses and groups with which they are directly involved, but there are also likely to be public benefits accruing to the wider community. These public benefits would be as a result of the individuals’ improved performance contributing to benefits to the wider community. There is no doubt that the programs supported by RIRDC have been highly successful in improving the skills and capabilities of those supported. However, it could be argued that the programs are relatively resource intensive, when compared to the number of individuals supported. It should be investigated whether alternative programs or strategies are available that would allow the support of more individuals for the same amount of resources. Of course, the overall benefit would only be greater if the alternative programs sponsored were as successful in their outcomes. An alternative
approach to increasing the total benefit from this type of support is to more strategically award the scholarships and awards, as discussed earlier.

A higher level of specification of needs and target audiences may allow improved targeting, for example of different leadership courses, perhaps some directed at youth, with less investment in Women’s Award and ARLP.

2.3 FRDC

The FRDC’s People Development Program (Program 4) in the FRDC’s RD&E Plan (FRDC, 2010a) is an enabling program to build leadership and research capacity, and foster a skilled workforce and innovation at all levels. The Program has three themes, each is briefly described below. In 2012 a series of economic evaluations was undertaken by Agrans Research on completed projects in each of the three themes. A log-frame approach was used to describe the link between activities, outputs and outcomes and benefits for each project. A cost-benefit analysis was required for the investment in each theme. The following briefly describes the theme project investments, together with some comments on the evaluation process that has been used. It should be noted that the boundaries drawn for projects by FRDC to fit into each cluster were fairly broad with some projects addressing such issues as extension, OH&S and RD&E planning.

Leadership Development

The objective of the Leadership Development theme (Theme 11) is to develop the skills and networks of leaders within all sectors so they can better contribute to decision-making and implementing change.

The 44 projects funded in this theme focus on both leadership training and research planning across all fisheries sectors (wild catch, aquaculture and recreational sectors). R&D planning and coordination for specific sectors and sub-sectors feature strongly in the cluster of projects evaluated. Research planning is a process whereby goals and objectives are articulated and the strategies defined as to how the goals and objectives will be achieved. R&D plans usually address the direction, strategies and priorities for the organisation that take into account the future industry environment.

The projects in this cluster addressed industry planning at different levels and aggregations of sectors. Most investments have been associated with R&D planning but a number of projects have been associated with research coordination and management, business planning, and industry organisation, funding and policy. Leadership capacity has been addressed through many of the planning projects but also through specific leadership training opportunities.

Two benefits were valued in this cluster of projects (FRDC, 2012a):

- The improved allocation of research resources derived from the planning investments. Of the 44 projects in the cluster, at least 30 projects would have contributed to the capture of such resource allocation benefits.
- The cost savings and/or additional industry revenues generated from improved industry structures and industry organisation, supply chain and marketing efficiencies and more rapid adoption of improved practices. At least 21 of the 44 projects were considered to have contributed to these benefits.

Other benefits identified but not valued include:

- Strengthened fishing industry sector and sub-sector leadership capacity
- More effective input from fishing sectors into national and state government policies
- Enhanced ecosystem based fisheries management
Workforce Development.
The objective of the Workforce Development theme (Theme 12) is to understand, and plan to meet, the needed capabilities of the industry’s future workforce. The economic analysis of investment in this theme included eleven projects. The eleven projects included investment in occupational health and safety, ecosystem modelling, a database on R&D capacity and an employment webpage. Several projects addressed current and future needs for workforce, skills and training.

Three benefits were valued as part of this analysis. They were:

- Improvements in the workforce and skills base
- Greater R&D efficiency and effectiveness
- Avoided increased costs to the pearl industry

The benefits identified but not valued include:

- Capacity built
- Reduced workplace accidents
- Improved fisheries and ecosystem management
- Industry cost savings

Innovation Skills
The objective of the Innovation Skills theme (Theme 13) is to build human capability to produce and adopt knowledge, technologies and innovative practices. This building of RD&E capability and innovation skills applies to both the fishing and aquaculture industries and their supporting research communities. The economic analysis of Part A of this theme (FRDC, 2012b) addressed projects investing in people capacity building and planning initiatives. Capacity building investments were made in individuals, partnerships, industry structures and representation, sectoral understandings, people and technical skills (e.g. aquatic health) and networks. More strategic investments were made in people development planning at a broad level, social science research, strategic goals and R&D priority setting.

Four benefits were valued in this cluster of projects and included:

- The improved resource allocation of research resources derived from the planning investments.
- The cost savings and/or additional industry revenues generated from improved industry development decisions from increased research effectiveness and people capacity in leadership, planning, governance and communication.
- A more favourable image of the wild catch industry in the eyes of the community. This benefit was associated with one project, resulting in a higher probability of the maintenance of access to existing wild catch fisheries.
- An expected small reduction in OH&S incidents and costs. This benefit was associated with an increased awareness of OH&S by industry participants.

The benefits identified but not valued include:

- Enhanced people development
- Improved national and state government policies from more effective input from fishing sectors.
The projects funded in Part B of this theme covered study tours, hosting and running of workshops and conferences, as well as scholarships and training. Knowledge sharing, networking and interaction between research personnel were considered fundamental to knowledge generation and capacity building.

Two benefits were valued in this cluster of projects (FRDC, 2012c):

- More efficient research resource allocation for some specific industries
- Enhanced industry development

Other benefits identified are considered to have been relatively small in relation to the benefits valued, and/or would have been difficult to value due to uncertain impacts and lack of sufficient evidence between the projects and the expected outcomes.

The benefits identified but not valued include:

- Enhanced research capacity
- Improved governance capacity
- Enhanced ecosystems
- Increased support and understanding of Indigenous cultural values

Workshops and Conferences
An evaluation of FRDC investment in workshops and conferences was undertaken in 2010 (FRDC, 2010b).

Workshops and conferences can be considered a mainstream aspect of the RD and E environment. The sharing of knowledge and the interaction between research personnel are fundamental to knowledge generation and capacity building. Workshops and conferences are avenues whereby such activities occur and have been supported strongly by FRDC.

FRDC funded workshops and conferences are not only a realm of scientist and researcher exchange but also for building industry capacity for management and policy purposes. Also of major importance is the facilitation of communication between industry and science that has positive knowledge application outcomes.

Apart from capacity building benefits that have implications for longer term future management and operations of both fisheries and research industries, these investments have delivered industry benefits in the shorter term. These benefits have been delivered via facilitation of adoption of improved management practices between members of individual fishing industries as well as between different fishing industries and fisheries. There have also been some benefits from improved communication, and market and policy development for specific industries and more broadly across the fishing industry as a whole.

2.4 GRDC

Grains industry Research Scholarships
The Grains Research and Development Corporation (GRDC) provides support for scholarships to encourage postgraduate training in disciplines that contribute to the research, development and extension priorities of GRDC and the Australian grains industry. An economic analysis of this scholarship investment carried out by Agtrans Research in 2011 (GRDC, 2011a) was focused on the 23 scholarships that were funded by GRDC in the years ending June 2003 to June 2008.

To assemble information for the analysis, two separate surveys were designed, one for scholarship recipients and the other for recipient supervisors. The avoided annual loss of benefits by adding a PhD
trained personnel to research capacity in grains was estimated. This was based on a previously estimated benefit-cost ratio for GRDC research investment of 3.3 to 1, the proportion of GRDC research expenditure estimated to be associated with PhD qualified researchers and the average salary of a PhD qualified researcher.

Benefits not valued included:

- Potential industry benefits due to the knowledge generated by the scholarship projects themselves
- Personal benefits associated with the increase in an individual’s research capacity
- Capacity building benefits to overseas industries due to leakage out of the PhD scholarship holders

**Partners in Grain (PinG)**

The rationale for this investment was that women and young people involved in grain growing constituted an underutilised resource for the industry and that a support initiative for this group could help build capacity in terms of engagement and involvement, confidence, skills and leadership so benefiting both the grains industry and the local communities. An economic evaluation of this investment was carried out for GRDC by Agtrans Research (GRDC, 2011b).

The investment supported a range of training and other engagement activities across all grain producing states. The main focus of the investment was on education and training of the target group, other professional development activities and communication and networking. The principal benefits emanating from the project were captured by individuals, farm businesses, the grain industry, other agricultural and horticultural industries, and rural and regional communities.

Apart from contributing to the personal growth and skills of those intimately involved, the investment contributed to the skills base and improved decision making associated with a range of farm business activities. These contributions would most likely not only have affected the net income of grain growers involved, but also would have driven improvements associated with the holistic approach to management in terms of such aspects of succession planning, farm health and safety and the physical environment on- and off-farm.

These benefits may largely accrue from the training courses attended, from the networking characteristics of the Program, and the interaction with other groups and initiatives facilitated.

A second benefit to industry is from the increased capacity for industry servicing and leadership. Developing the skills of grain growers has led to improved business practices and given people the confidence to take on new roles within the industry. Examples of this include Reference Group members becoming involved in GRDC’s Panels and chairing industry committees. The trialling of post workshop communication and evaluation methods could have significant spinoff for evaluation and hence assessment of the cost effectiveness of different GRDC extension investments.

A benefit to the community is the increased capacity for community servicing and leadership from the increased confidence and skills developed from some of the PinG affected individuals. Examples of this include Reference Group members and others taking on community roles in local government and school committees.

Three benefits were valued in the cost-benefit analysis, selected as to represent the most likely type of impacts associated with the Program and which partly relied on case studies. The representative gains were:

- A chemical cost reduction due to improved spray applications
- A cash receipts gain from improved marketing and grain storage decisions (higher grain price or less wastage in storage)
The reduction in time spent in the office due to improved office management

*Capacity Building Cluster of GRDC Projects*

The specific capacity building investments considered in this evaluation included:

- The Australian Rural Leadership Program (ARLP)
- The Nuffield Scholarship Program
- The BHP Billiton Science Awards
- The Science and Innovation Awards for Young People in Agriculture (Bureau of Rural Science/DAFF)

In order to focus on some specific aspects of the selected investments including specific recipients, the period of GRDC investment covered was restricted to a set of projects completed in the three years ending June 2006 to June 2008.

The four ARLP participants, the nine Nuffield Scholars, and the four persons receiving awards were contacted by phone and were asked to complete a questionnaire focusing on the impact of the scholarship/award on their careers, the grains industry and their rural community.

There were four benefits valued in the ensuing analysis:

- The direct benefits to grain farmer businesses from scholars and award winners
- The benefits to grain farmer businesses from those influenced by scholars and award winners
- The increase in scientific capacity from attracting students and maintaining commitment by existing young scientists, with implications for future productivity on grain farms and preventing a shortage of scientific resources
- The increased capacity in community leadership

Benefits identified but not valued include:

- Personal benefits
- Industry and scientific benefits excluding the grain industry
- Specific technologies developed with Award resources and applied by grain farmers (e.g. peanut planting)
- Increased recognition of on-farm environmental sustainability by the grains industry
- Improved government policy making

Of the four ARLP scholars and nine Nuffield scholars, many were grain farmers who returned back to their farms invigorated with new ideas. It was assumed that most of these scholarship holders made changes that provided an increased net income to their own grain farming operation. It was assumed also that most ARLP and Nuffield farmers influenced other grain farmers in the region in which they work via observation, personal contact and via local industry leadership roles. It was assumed that the impact on the net farm cash income of these other grain farms was only a small increase.

Scientific capacity building benefits were assumed to be derived from the BHP Billiton and DAFF Awards that attract young people into science and encourage and retain existing young scientists. In the longer term this is assumed to benefit the grains industry research by contributing to the marginal removal of scientific capacity constraints and raising the quality of research.

The community leadership capacity benefits valued were largely from the support of the ARLP, with some contribution made also from Nuffield scholars. Evidence for linkages to community leadership
was assembled from the questionnaire responses (e.g., involvement in Catchment Advisory Committees and Community Groups (Lions, Parents and Friends Associations, Sporting clubs, and Youth Advisory Groups)). Leadership capacity added was then valued by assuming leadership is one of five key factors in maintaining viable rural communities (Burnside, 2007) and then applying a published willingness to pay value (Bennett et al, 2002) for such maintenance.

2.5 SRDC

The 2007-2012 SRDC R&D Plan addressed three Investment Arenas: Regional Futures, Emerging Technologies and People Development. Key deliverables planned for the People Development Arena included:

- Improved capability of individuals across the industry for positive, innovative and effective leadership
- Improved capacity of individuals to change, learn and innovate
- Improved industry capacity to collaborate and innovate with people within the industry
- Improved industry structures and processes that enhance its ability to compete internationally
- Improved industry capacity to learn and innovate from people outside the industry
- Improved capacity of regional industry participants to partner with researchers in identifying, addressing and delivering R&D outcomes

Along with some other investments, SRDC commissioned Agtrans Research to undertake an evaluation of projects in its People Development Investment Arena in 2012. There were six projects included in this cluster. Four projects were focussed on building the leadership capacity of young, sugar industry people. One project was focussed on improving R&D governance and processes in the Australian sugar industry and one project was focussed on increasing the involvement of women in industry leadership roles.

The investments were expected to deliver both of the following benefits:

- Increased skills, confidence, knowledge and networks of individuals
- Increased industry leadership capacity

Increasing the skills, confidence, knowledge and networks of individuals is difficult to value on its own although it is acknowledged that the perception of self-worth and personal satisfaction levels would no doubt have personal value to individuals. However, these personal ‘improvements’ will most likely lead to increases in the industry’s leadership capability. It is assumed that an industry with greater leadership capability will result in improved management and decision making processes as well as increased efficiency in resource allocation. Eventually this is assumed to result in a reduction in production costs for the industry.

The impact was assumed to be a reduction in cane production costs and this was assumed to apply to a small part of the industry. The first year of benefits was assumed to be in the year ending June 2012 and it was assumed to take a number of years to reach the full expected benefit.

It is likely that the industry leadership capacity built would benefit not only the cane production sector as assumed in this analysis but also other sectors of the industry such as those involved in processing and marketing. Therefore, the results of this analysis may have underestimated the potential impact of the investment in this cluster.

The major benefit types identified but not directly valued include:

- Increased RD&E effectiveness and efficiency
Increased community leadership capacity

The reason why the RD&E effectiveness/efficiency benefit was not valued was there was only a weak or uncertain causal relationship between the investment and any benefits from RD&E cost savings or enhanced effectiveness. Increased community leadership capacity was not valued as its magnitude of the value of the benefit was thought to be only minor and it was difficult to value due to its pervasiveness.

2.6 GWRDC

In 2011 the Grape and Wine Research and Development Corporation (GWRDC) had a review conducted (Urbis, 2011) on their leadership investments as part of determining progress to date against their five year plan. GWRDC invests in three leadership programs:

- One candidate per year in the Australian Rural Leadership Program (ARLP)
- Fifteen candidates per year to attend the Future Leaders Program (a joint initiative between GWRDC, Wine Australia, the Winemakers’ Federation of Australia and Wine Grape Growers’ Australia)
- More than 100 participants over three years to attend the Wine Industry Leadership Program

The review sought to understand the value of GWRDC investment made to date via telephone interviews with key stakeholders to assist with direction and survey design, an online survey of past participants in GWRDC supported leadership programs and more in-depth telephone interviews with those participants willing to provide more information.

Participants were asked questions regarding awareness, expectations and importance of GWRDC investments in leadership. They were also asked directly how they rated the return on investment from the program for the industry (e.g. rating of ‘excellent’).

The review found that there was scope for improvement in the awareness of GWRDC investments in leadership and that the expected outcomes sought from industry from such investments could be clarified or made more explicit. A key recommendation was that a system be developed for tracking outcomes over time. Overall, participants in the leadership program thought the leadership investments were important and should continue. The GWRDC review stopped short of trying to quantify the return on investment; however, it did develop a qualitative list of possible indicators to assess their performance against a series of goals for GWRDC, industry, employers and participants. For example, some goals include completion of leadership courses/programs, industry representative bodies being able to fill vacant positions and employers reporting a positive perception of employee’s participation in a leadership course.

2.7 Joint investments

Hassalls and Associates (2008) conducted a review on the Cooperative Venture for Capacity Building (CVCB). The venture ran from 2001 to 2007 with the purpose of funding initiatives that would support rural human capacity building. Partners in the CVCB included:

- Australian Wool Innovation (AWI)
- Cotton Research and Development Corporation (CRDC)
- Dairy Australia
- Grains Research and Development Corporation (GRDC)
- Grape and Wine Research and Development Corporation (GWRDC)
- Land & Water Australia (LWA)
The CVCB underwent three levels of evaluation; testing the outputs of the CVCB with practitioners and policy makers, reviewing the governance and management of CVCB and finally an evaluation of the CVCB’s performance. The following summary focuses on the third level (evaluation of performance) of the wider CVCB’s evaluation. The specific objectives of this third level of evaluation were to determine the impact of CVCB on key stakeholders and recommend measures to improve the CVCB’s investments in delivering benefits to these key stakeholders.

An evaluation framework was developed based on program logic. The structure of the framework follows a pathway of program logic from program management (including inputs, program structure and project design), to outputs and then impacts, so that the framework captures the objectives of the CVCB. The evaluation then involved populating the framework through reviewing documentation and consultation with key stakeholders.

While it was found through the review that the CVCB did deepen the understanding of capacity building and created and maintained a forum for capacity building, the review concluded the CVCB did not achieve its desired outcomes and/or potential due to five factors:

- A logical rather than strategic portfolio of research due to the need to balance investor/researcher interests and the wide range of potential capacity building research against the divergent needs of the various stakeholders
- Inadequate consideration of the pathway through which research results would achieve the key results areas
- A wide range of plans and measures, but little monitoring and evaluation which limited the ability to demonstrate performance and maintain stakeholder confidence
- The inability of RD&E to address all the capacity building issues identified
- Insufficient mandate and ability of the CVCB to position and coordinate capacity building within the broader policy and institutional context
3. Capacity Impacts and Their Valuation

A framework for describing impacts of capacity investments can use a beneficiary categorisation such as the individual, the industry, the wider rural and non-rural communities (including governments) that includes the physical environment on and off-farm.

Table 3 uses these beneficiary types to summarise the categories of impacts that may be delivered by RDCs through different categories of capacity building investment. Each of the impact types is then illustrated with examples from recent RDC evaluations with information on how some of the impacts were valued in a cost-benefit analysis. The words impacts and benefits are used interchangeably in the following description.

<table>
<thead>
<tr>
<th>Category of capacity impact</th>
<th>Beneficiaries and elements covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvements in personal well being</td>
<td>Covers individual education and training, gaining skills, personal satisfaction, recognition by peers, career satisfaction, worker convenience and amenities, involvement in decision making</td>
</tr>
<tr>
<td>Improvements in industry capacity leading to growth and/or stability/resilience</td>
<td>Covers productivity changes and industry and market development via dimensions of institutional structures, cohesion, leadership, technical and financial skills, awareness, intentions, practice change, networking, capacity to change and adjust, education and training, innovation, and industry policy</td>
</tr>
<tr>
<td>Increased social equity and reduced conflict</td>
<td>Covers improvements in understanding of issues among and between industry and community groups, protection of traditional knowledge and cultural practices, improved equity and balance in research resource allocation and policy</td>
</tr>
<tr>
<td>Improved community perception of industry</td>
<td>Covers increased understanding by the community with regard to industry practices and legitimacy (e.g. genetic modification, fishing and forestry, live animal exports, environmental stewardship)</td>
</tr>
<tr>
<td>More efficient and effective use of government resources</td>
<td>Covers reduced transaction and compliance costs for government, improved government policies and services and more efficient investment of public R&amp;D resources</td>
</tr>
<tr>
<td>Increased scientific research capacity</td>
<td>Covers the dimensions of innovation, leadership, education and training in science and research</td>
</tr>
<tr>
<td>Increased community capacity</td>
<td>Covers dimensions of community leadership, communications, engagement and involvement, resilience and networking</td>
</tr>
</tbody>
</table>

3.1 Impacts on individuals

One of the impacts of receiving awards or scholarships, or undertaking higher degrees or training courses (e.g. leadership) is the personal satisfaction obtained from enhanced feelings of fulfilment.
While this may not be the principal benefit being pursued by the RDC investment, it is necessarily an important motivational factor. Aligned with this impact is the advancement in personal careers that such support provides to those who are supported by such capacity building activities. This individual benefit can be considered a spillover benefit from investment of industry or government resources and is offset in some instances by fees and other costs incurred by the individual.

The impact on individuals can be viewed as largely a pathway to impacts on research, industries, and rural communities, all of which are the primary targets of the RDCs.

3.2 Impacts on the industry

The impact on industry is considered to be the most important impact of capacity investment from an R&D viewpoint, whether it be investment directly targeted at individuals, industry leadership or industry institutional structures linked to R&D, or indirectly improving R&D capacity in the medium to long term that can be linked to efficiency and effectiveness of subsequent R&D investment. Impacts on the industry are described here in terms of the three categories in the left hand column of Table 4. Attention is then directed to the type of impacts associated with the capacity investments made by RDCs for each of the categories.

Table 4: Categories of capacity investment with examples

<table>
<thead>
<tr>
<th>Category of RDC capacity investment</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Industry leadership courses/training | Australian Rural Leadership Program (ARLP)  
Fulbright Farming Scholarships |
| Awards                             | Queensland Grains Industry Awards  
Rural Women’s Award |
| Education and other support        | Scholarships  
Conferences, Workshops and Travel Support  
School Children and Undergraduate Support |

Industry leadership courses/training

Such courses/training usually aim at preparing participants to take on leadership roles in primary industries. Impacts are difficult to assess but it can be assumed that participants subsequently take on leadership roles and that their performance in those roles will be enhanced due to the course exposure. It is assumed those who may already be in leadership roles will become more effective as a result of the courses. Leadership activities that may be strengthened could include improved policy development, negotiating and interfacing with fractious industry groups, RD&E priority setting and management, communicating with media, governments, regulators and community groups and other industries.

The relevance of industry leadership to the RDCs is twofold. First, improved leadership capacity could be expected to provide greater individual expertise and understanding on the various Boards and Committees charged with innovation, priority setting and delivering R&D investments and solutions to the associated industries. Second, improved leadership may enhance industry structures that may enable greater cohesion, efficiency and effectiveness in terms of policy, market development and industry progress.

It is challenging to assemble evidence to demonstrate impact from leadership strengthening as leadership is usually only one of a range of factors contributing to some of the impacts associated with change and innovation in rural industries. Perhaps the best methods that can be used are longitudinal surveys of leadership course participants and their activities over time post course, as well as their self-perceptions of the differences made, and compare such progress and self-perceptions with those in positions of leadership who have not been exposed to leadership courses. Other issues to contend with
Assembling evidence of impact is whether those attending leadership courses would have developed into effective leaders anyway, as well as how participants arrive at undertaking leadership courses.

In cases where Agtrans has attempted to value the benefits from leadership courses, this has been achieved by assuming some connectivity between leadership enhancement and the potential for changes in future cost structure reductions for part of the industry or improved market access or market development for some products of the industry concerned. These assumptions were based on inferences from some of the individual project reports examined.

**Awards**

The role of awards is usually largely to do with recognition of past services. While there may be wider impacts and spinoffs associated with encouraging pride in the associated group (not just the awardee), group morale and cohesion, and highlighting a valued role to a wider audience, awards are largely historical. RDCs give awards largely to stress the value of the achievement so that the principal impact (apart from that on the awardee) could be assumed to be the encouragement of more of the same behaviour by others.

Awards also give some prominence to the awarding RDC or industry. For example GRDC supports the Queensland Grain Industry Awards. A recent press release stated:

“The State’s best and most innovative grain producers were recognised and the importance of the industry acknowledged in November 2013 at the Queensland Grain Industry Awards. The gala dinner brought together industry stakeholders from across the country for the presentation of three prestigious awards to recognise production excellence and leadership. AgForce grains president, Wayne Newton, said the event not only highlighted industry innovation, but also the strong contribution of the grains sector to the Queensland economy. “The Queensland grain industry represents an exceptional standard and we are proud to showcase and celebrate this innovation and commitment to sustainability and best practice,” Mr Newton said. “Our product is considered some of the best in the world and makes a substantial contribution to our State”.”

The message provided by the press statement included reference to sustainability and best practice, innovation, leadership, standards, quality of product and showcasing the importance of the grain industry to the state of Queensland. Internally for the industry the awards may have instilled pride, loyalty and incentives/motivation to the members of the industry. Externally, the awards may have created a favourable image for the industry with perhaps some marginal impacts related to future licence to operate and support within the wider community.

The RIRDC Rural Women’s Award is Australia’s pre-eminent Award for rural women. The Award is a leadership and capacity building initiative, with a bursary to support professional development and contribution to primary industries.

This is clearly a pro-active award not only to recognise past achievements and future potential, but also to invest in securing a future impact. The award may well have installed pride, loyalty and incentives/motivation to other rural women as well as men. But more importantly, from an evaluation point of view, the prize money is awarded to produce further benefits to industry and rural communities.

In one case where Agtrans has attempted to value the benefits from awards, this has been achieved by assuming some connectivity between such awards (when supported by an RDC) and the probability of retention of the level of R&D levy proceeds captured by the RDC which had been demonstrated to have produced a higher rate of return that what could have been obtained elsewhere. Other options may have been to assume some connection between the awards and some small increase in future adoption of best practices with a resulting industry cost reduction. The other example above (the Rural Women’s Awards) would provide a significant opportunity for identification and demonstration of industry and community impacts, some of which could be valued.
Education and other support

Building R&D capacity is a major avenue for RDC investment and much of the capacity is often focused on supporting higher degree training via scholarship support, as well as other forms of research support such as post-doctoral fellowships, visiting fellowships etc. Other investments in education are made in industry associated personnel and in encouraging and attracting school children and school leavers to primary industries and primary industry sciences. These broad areas of investment are addressed in more detail below.

Postgraduate scholarships

Most RDCs have a postgraduate scholarship program whereby investment is made in training future potential research personnel. Selection of candidates can be based on a need to fill a particular skill gap or discipline, the topic advanced by the potential scholar, or the best qualified candidates that may apply.

The capacity built through scholarships could be more valuable if it is in the research areas that are in future demand. As it is challenging, capacity planning has been given only limited attention by most RDCs in the past. While there would be no guarantee of an improved outcome, such capacity planning initiatives would seem worthwhile.

Assembling evidence to evaluate scholarship investment would first include assessing whether the PhD was completed or not, and if not, the reasons why. Second it can be worthwhile tracking the careers of those completing PhDs for a period (e.g. the first 5 years or more) after PhD completion.

As reported earlier, the impact assessment for GRDC carried out by Agtrans in 2011 focused on 23 scholarships that were funded by GRDC in the years ending June 2003 to June 2008. (GRDC, 2011a). Surveys of both scholarship recipients and their supervisors were undertaken as part of the evaluation. Survey results indicated that only 8 of the 23 scholarship recipients were currently working in Australian grains research. A further 6 were working in Australia but not in grains research, five were working overseas, and three were not in the workforce. The most common reason given why a scholarship recipient was not working in Australian grains research was because there were no suitable positions available. This may have implied that research capacity is being built in disciplinary areas that are not experiencing capacity shortages and as a result the capacity built is being leaked out to other industries and countries. This was in conflict with the views of the supervisors who all reported a current capacity gap in their scholar’s disciplinary area. It would be of interest to assess how many of those working overseas eventually return to Australia and the Australian grains industry.

Two approaches to valuing the benefits from PhD support are to value the impacts of the research undertaken in the PhD or valuing an avoided capacity constraint in the future. Despite the shortcomings in being able to value the lowered research effectiveness due to a potential lack of research capacity, this was the approach adopted by Agtrans in the GRDC study referred to earlier.

Conferences, Workshops and Travel Support

The support for workshops and conferences has helped deliver a range of capacity building benefits to the various industries, through exchanges associated with the science, exposure to other industries, and market development and policy making associated with the industries concerned.

Benefits to rural and fisheries industries have been delivered via:

- Communication with other parts of the same industry that has affirmed constraints and priorities leading to more focused market and policy development for specific industries.
- Facilitation of adoption of improved management practices due to communication between members of individual operations.
Improvements in the extent and quality of exchanges among scientists, and between scientists and industry personnel resulting in new ideas being promoted and improved proposals for R&D funding and collaboration.

A contribution to development of policies, strategies and solutions to industry opportunities and constraints.

In one Agtrans analysis for the fisheries industry, one benefit valued was scientific capacity building (FRDC, 2010b). It was assumed this improved capacity lead to an increased rate of innovation, ideas tested earlier then otherwise, project proposals that better reflected industry needs, and improved collaboration among researchers. Of the 19 projects in this particular investment cluster, at least 17 projects were considered to have provided such benefits.

The impact of more efficient and targeted R&D investments was valued through a saving of research resources. It was assumed that in the absence of the workshop/conference, the same research outcomes would have eventuated but a higher cost would have been incurred due to less coordination and synergy. The extent of the efficiency gain was assumed to have varied for each workshop/conference.

A second benefit valued was associated with the greater focus in addressing industry problems and solutions resulting in efficiencies along the supply chain and improved policy and market development. The principal sectors where such benefits were viewed as being significant were all within aquaculture and the abalone and lobster wild catch industries.

It was assumed that value growth or protection of the current value of each industry was influenced to a small extent by these conferences/workshops through the mechanisms previously described. The annual gains were assumed to apply to the five years after the conference or workshop was held.

School children and undergraduate support
Some investments in influencing school children’s interest in agriculture and in encouraging entry to the primary industries science area have been made recently by RDC support for the Primary Industries Centre for Science Education (PICSE). This investment was accompanied by a continuing monitoring and evaluation (M&E) program (Stone, 2011).

A recent economic evaluation of the investment in PICSE used data from the M&E initiative to estimate its benefits relative to its costs. If an investment is to be quantitatively evaluated in economic terms, the kind of monitoring and data assembly that was available from PICSE is extremely helpful as it assisted developing the critical assumption of how many additional school students were influenced to enter the primary industries science arena due to the investment.

Of course it was still necessary to make an estimate of other values, such as the marginal value of an additional primary industry science graduate; this was achieved through a survey of prospective employers.

In summary, the investment in education and other support can lead to some continuity in research capacity in turn leading to more effective and timelier R&D investment due to availability of qualified personnel. Two types of benefits have been defined from the investment in scholarship schemes: research capacity building and industry benefits emanating from the specific research carried out under the scholarship projects themselves.

3.3 Impacts on the wider community and rural communities

The wider community usually is not considered a direct target of most current RDC capacity building investments. However, some such investments do have significant implications for rural communities, particularly those made earlier by Land and Water Australia and those made by RIRDC with its multi-disciplinary and national interest funding responsibilities. For example, the RIRDC investments in leadership and women and GRDC’s investment in PinG, both have significant implications for community capacity.
Now that an RDC such as Land and Water Australia does not exist, there is probably less direct capacity building activities aimed at natural resource management and the environment. However, some indirect impacts in these areas occur through leadership training, awards, scholarships, and workshops and conferences supported via the RDCs.

Some RDC investments have strong interactions with rural communities such as those in catchment management in relation to NRM, environmental management more generally and rural health and safety. Many of these capacity investments also benefit individuals, farm families and industries as a whole.

Other indirect community benefits occur from scholarships funded by the RDCs when a RDC capacity building output such as a primary industry science undergraduate or a postgraduate leaks out of the area to work in, for example, another industry (e.g. medical biotechnology). However, this apparent gain to the community is most likely offset by the leakage into the RDC industries by those trained without RDC support. While attrition and retention rates for undergraduate students undertaking tertiary education are reported in Australia, to the knowledge of the authors the extent of leakage in and out over time for postgraduates and other researchers across industries has not been well documented.

Some capacity building investments (more accurately labelled communication investments) aimed at the wider community (or parts of the wider community) can deliver industry benefits via improving the rights to farm or the licence to operate through improved information being available to the wider community. Such investments can correct inaccurate information, alleviate inappropriate regulation, help maintain access to natural resources and/or markets, and may have implications for industry growth and/or cost reductions.
4. A Framework and Guidelines for Evaluation of Capacity Building Investments

4.1 The Logical Framework approach

An evaluation of any capacity building investment by the RDCs needs to employ a logical framework approach. As with other investment evaluation, a logical framework (log-frame) approach is useful to assist in building and organising evidence along the pathway to impact. Such a framework is necessary to describe and produce a meaningful and credible evaluation whether this is driven by a desire for future structural or process improvements, a qualitative review or evaluation, or a quantitative evaluation employing cost-benefit analysis or other metrics. The usefulness of a log-frame approach applies to both historical (ex-post) and prospective (ex-ante) evaluations.

Various forms of the logical framework approach are used in Australia in project and program planning, monitoring and evaluation. For example,

AusAiD: The Logical Framework approach is used throughout AusAid's management of aid activities in identifying and assessing activity options, preparing the activity design in a systematic and logical way, appraising activity designs, implementing approved activities, and monitoring, reviewing and evaluating activity progress and performance (AusAid, 2005).

CRC Application Process: The CRC Impact Tool needs to be completed for any new application for a CRC. The Impact Tool represents a Logical Framework approach where activity, outputs, usages and impacts and their linkages require completion. Also, updating the Impact Tool provides a measure of performance during the life of a successful CRC (Cooperative Research Centres, 2014).

RDC Project Proposals: Most RDCs use some form of a logical framework approach in their project proposal forms.

4.2 Evaluation purpose

In any evaluation the purpose of the evaluation is paramount and needs to be clearly stated. For most RDCs the purpose of an economic evaluation may be to demonstrate:

- A past investment has been worthwhile (past investment accountability) and may include a cost-benefit analysis
- A future investment will be worthwhile (future investment accountability) and may include a cost-benefit analysis.

However, in order to learn from the past, particularly if a continuing or follow-on similar investment is being considered for the future, a third purpose may apply. This may entail a wider more general review and may or may not be associated with an economic evaluation. Such a review may need to address specific evaluation or diagnostic questions, such as:

- Was the investment appropriate? If not, why not?
- Why was an intended output or outcome not achieved?
- When an output or outcome was achieved but required additional financial resources and/or time, why was this so?
• What were the principal constraints to the achievement of outcomes and benefits and how may these be overcome in future?
• Even if the investment was performing efficiently and effectively, what changes/improvements can be made to ensure any future investment may perform even better?

This third type of evaluation (the general/diagnostic review approach) sometimes can incorporate an economic evaluation into its terms of reference.

After the emphasis on ex-post accountability via cost-benefit analysis was stressed by the CRRDC in 2007, less attention may have been given to the review evaluation that addressed questions such as those above. For some RDCs, some terms of reference for economic evaluation included a review/improvement orientation by requiring some focus on lessons learnt, but this was generally not a mainstream pursuit of these CRRDC driven economic evaluations. The relative demise of learning outcomes may have been due largely to the CRRDC emphasis and the limited resources many RDCs were willing to appropriate for evaluation. This applied to both capacity and other RD&E investments.

Whether the accountability purpose and broader review/diagnostic purpose can be addressed in the one evaluation is an important question. If the general/diagnostic review approach is to be implemented, it is relatively easy to incorporate an economic evaluation as many of the tasks in an economic evaluation would have been covered already. It is relatively more difficult to tack a meaningful diagnostic review onto the back of an evaluation designed primarily as a cost-benefit evaluation as required under the CRRDC guidelines.

The type of evaluation made is a matter of choice and individual RDC preferences; an effective evaluation could do both if there are sufficient resources and time and if both are reflected in the terms of reference. Whatever the purpose or purposes, such an evaluation or review is still best carried out using a logical framework approach.

The generalisations for evaluation as discussed above apply to both capacity investment as defined in this report, as well as other RD&E investment evaluation.

### 4.3 Information requirements for capacity building evaluations

Some of the characteristics of more specific information requirements for applying a log-frame approach to evaluating capacity building investments are listed in Table 5. The broad type of evidence required as described in Table 5 would need to be itemised in more detail depending on the particular capacity building investment being evaluated.

**Table 5: Examples of data required for capacity building investments when applying the Logical Framework Approach**

<table>
<thead>
<tr>
<th>Step in Logical Framework</th>
<th>Examples of type of evidence required</th>
<th>Potential sources of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>1. Monetary and in-kind resources by year for the capacity building investment&lt;br&gt;2. Reasons for additional resources required to those originally envisaged</td>
<td>Investment proposals and RDC records; surveys of participants to identify personal costs incurred</td>
</tr>
<tr>
<td>Activities</td>
<td>1. Number and type of postgraduate scholarships advertised&lt;br&gt;2. Selection process for applicants for scholarships&lt;br&gt;3. Number and type of scholarships awarded</td>
<td>RDC records; Committee reports and recommendations</td>
</tr>
<tr>
<td>Outputs</td>
<td>Project reports</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1. Number of PhD scholarships completed satisfactorily</td>
<td>Monitoring and evaluation (M&amp;E) reports</td>
<td></td>
</tr>
<tr>
<td>2. Numbers and categories of participants attending workshops and conferences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Reasons outputs not delivered or not delivered on time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Post-project sample surveys and longitudinal monitoring of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Activities, employment and location of persons after degree completion</td>
<td></td>
</tr>
<tr>
<td>2. Post-award performance of those winning awards and other applicants/finalists</td>
<td></td>
</tr>
<tr>
<td>3. Activities undertaken, employment and leadership positions held by those completing leadership courses</td>
<td></td>
</tr>
<tr>
<td>4. Post conference surveys of those supported with travel awards</td>
<td>Surveys of researchers/industry/community personnel as to how they view the awards</td>
</tr>
<tr>
<td>5. Activities targeting needs and shortages identified</td>
<td></td>
</tr>
<tr>
<td>6. Reasons why outcomes not delivered as planned</td>
<td>Extent and types of actions taken to fill gaps and their results and implications</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall Program</th>
<th>Program reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Opportunities for improvement</td>
<td>Interviews with program personnel, users and other stakeholders</td>
</tr>
<tr>
<td>2. Cost effectiveness of investment versus alternatives (achieving the same outcomes and impacts via a different but lesser cost approach)</td>
<td></td>
</tr>
</tbody>
</table>

### 4.4. Cost-benefit analysis

Assume that the various types of evidence identified above have been assembled and are considered, along with some evidence that is quantitative in nature, and that some conclusions regarding the effectiveness and likely impacts of the investment have been made. Also assume that some evaluation questions have been addressed and that some suggestions or recommendations for improvement have been made. The next question is whether it is worthwhile to extend the effort in evaluation of capacity investments to provide investment criteria via cost-benefit analysis?

Despite assembling some evidence on the outcomes and potential benefits of the investment, it is still necessary to make assumptions regarding the causal linkages between the investment and the impact valued. In capacity building investments the linkage is often indirect and confounded with a range of other factors that may contribute to the impact valued, as described earlier in Section 2.

Some RDCs require some financial value analyses of capacity building investments, despite the lack of certainty around many of the assumptions that necessarily have to be made. At times pressures build in RDCs to place values on the benefits from capacity building investment in order to treat all RDC investments with similar scrutiny. This can arise due to a need in portfolio management as to how such investments compare with the mainstream RD&E investments associated with better defined productivity benefits, whether the latter be short or long term. A question may be “are we investing not enough or too much in this capacity building area?” Cost-benefit analysis may provide an input into an answer to this question.
Developing an appropriate counterfactual is also challenging for some capacity investments. It could be argued, for example, that supply and demand in a research area will correct a shortage of researchers. But of course there will be lags involved and in the meantime costs may well be incurred by the industry. Another counterfactual position could be that prospective scholars can gain financial support for training from other quarters. In relation to this second point, most RDCs appear to believe that irrespective of the validity of alternative financial support, it is the responsibility of the RDC to contribute to managing its future research capacity.

However, it is important to construct the counterfactual from the point of view of the investment made, not the organisation making the investment (Gordon and Chadwick, 2007). A valid counterfactual will not include assuming that another organisation would have funded the investment anyway, as the evaluation is of the investment activity, regardless of who has undertaken it.

A summary of the Agtrans Research experience with including a cost-benefit analysis in the evaluation of capacity building investments is:

- There is usually insufficient information available concerning capacity investment outcomes (and in some cases, even outputs); but this could be corrected with increased attention to monitoring and evaluation (M&E) and more resources available for the evaluation.
- Some investments may be associated with an M&E plan that may direct information assembly during the investment; this can be particularly useful for evaluation at a later stage.
- Some secondary data collection or personnel surveying may be required as part of the evaluation in order to obtain evidence to support linkages to impact; this evidence is useful, whether benefits are valued or not, but it can require additional resources.
- Where quantitative assessments are made, the analysis and results should be qualified highlighting the degree of confidence (usually low) held in some of the assumptions.

### 4.5. Some guidelines for RDC evaluation activities

The following guidelines are presented as steps in the three tables that follow:

- Steps for the RDC (Table 6)
- Steps for a qualitative evaluation (Table 7)
- Steps for a cost-benefit analysis (Table 8)

#### Table 6: RDC steps in undertaking an evaluation of a capacity investment

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Determine purpose and scope of the evaluation. (e.g. accountability including appropriateness, effectiveness, efficiency; ex post or ex ante, portfolio management; continuation of an investment, cost-benefit analysis to be included or not)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>If ex ante, decide if an M&amp;E plan is to be developed; if ex post, ascertain if a relevant M&amp;E plan is available</td>
</tr>
<tr>
<td>Step 3</td>
<td>Specify the unit of investment (e.g. series of projects, project cluster, or program) that is to be evaluated, ensuring investment is time bound and groupings of individual investments are meaningful.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Ensure project material such as project specifications, budgets, M&amp;E plans, milestone reports, and final reports are appropriate to the investment and are available.</td>
</tr>
</tbody>
</table>
Step 5 | Depending on the RDC policy/strategy of the funding organisation (if available), decide if a cost-benefit analysis or other quantitative analysis is required.

Step 6 | Determine a budget or budget range to be allocated to the evaluation.

Table 7: Evaluation steps in undertaking a qualitative evaluation of a capacity investment

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Use a log frame approach to describe the investment and its inputs, outputs, outcomes and impacts (pathway to impact).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Plan the lines of evidence and information to be assembled along the pathway to impact, depending on the indicative budget and whether a cost-benefit analysis is likely to be included.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Ascertaining how best to assemble information to support links and causality along the pathway to impact. Consider methods for eliciting information from different groups, such as telephone, email, written questionnaire, focus groups etc.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Assemble information on what actually happened after the investment e.g. participant actions, communication and institutional changes; consider attribution to the investment as other factors also may have been influential.</td>
</tr>
<tr>
<td>Step 5</td>
<td>Assemble views and opinions on outcomes and impacts wherever feasible from both key participants and non-participants.</td>
</tr>
<tr>
<td>Step 6</td>
<td>Assemble logical linkages between the investment and specific impacts such as a contribution to productivity changes or the delivery of impacts earlier than otherwise.</td>
</tr>
</tbody>
</table>

The evaluation resulting from the steps applied in Table 7 will result in a qualitative evaluation that may or may not be supported by numerical evidence (e.g. number of scholarships retained in the grain industry). If a quantitative analysis is to be undertaken, the type of analysis needs to be selected. This will integrate the quantitative information assembled and may be a cost-benefit analysis, scoring model, or some other form of multi-criteria analysis. As the emphasis from the CRRDC is on CBA, Table 8 provides some guidelines for undertaking a cost-benefit analysis of a capacity investment.

Table 8: Steps in undertaking a cost-benefit analysis of a capacity investment

<table>
<thead>
<tr>
<th>Step 1</th>
<th>As for Steps 1 to 6 in Table 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Place estimated values on the impacts defined with appropriate attention given to probabilities along the pathway to impact and to attribution of the impact to the investment</td>
</tr>
<tr>
<td>Step 3</td>
<td>Ensure sensitivity analyses are undertaken to stress uncertainties in the assumptions that have been identified</td>
</tr>
<tr>
<td>Step 4</td>
<td>Consider utilising a stochastic analysis such as @RISK to demonstrate the likely spread of investment criteria given distributions of key input variables</td>
</tr>
</tbody>
</table>
Implications

The report presents an evaluation framework and guidelines for RDCs for consideration when an RDC contemplates evaluating one or more of their investments in capacity building activities. If used appropriately the framework can assist in achieving better use of levy-payer resources for results in the capacity building investment area.
Recommendations

No recommendations are made as part of this report.
References


A Framework for Evaluating Leadership and Capacity Investment by the Rural Industries RDC

By Andrea Bath and Peter Chudleigh

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