Lessons from implementing INFFER with regional catchment management organisations

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Abstract

Investment in natural resource management (NRM) by regional organisations in Australia has been widely criticised for failing to achieve substantial environmental outcomes. The Investment Framework for Environmental Resources (INFFER) is a tool for developing and prioritising projects to address environmental issues such as water quality and biodiversity decline, environmental pest impacts and land degradation. It aims to achieve the most valuable environmental outcomes with the available resources. During 2008 and 2009 INFFER has been implemented with a number of catchment management organisations (CMOs) throughout Australia. In this paper, we report on lessons from and implications of this experience.

Data on implementation were collected in formal and informal ways from staff of organisations that were using INFFER and state agencies, including: an on-line survey, benchmarking questions at training workshops, a formal on-going monitoring and evaluation process tracking the use of INFFER by CMOs, and comments made in correspondence and informal feedback to the INFFER team. In this paper we describe issues that arise when implementing INFFER with regions and organisations, and how the INFFER team has attempted to address these. Key issues include a desire to consider the community as an asset and emphasise capacity building, a rejection of the need for targeted investment, and various difficulties associated with specific aspects of the Framework.

Existing institutional arrangements, and the legacy of past institutional arrangements, remain serious barriers to the adoption of methods to improve environmental outcomes from NRM investment. A lack of rigour in investment planning has become accepted as the norm, and resistance to processes to improve rigour is common. However, many CMOs want to achieve better environmental outcomes with their limited funds, and we report on our efforts to work with them to achieve this by using INFFER.

Introduction

Investment in natural resource management (NRM) by regional organisations in Australia has been widely criticised for poor achievement of environmental outcomes (e.g. Auditor General, 2004, 2008). In an effort to address this, many tools, models and frameworks have been developed to assist with the spatial targeting and prioritisation of environmental investments in recent years (see Pannell *et al.*, 2009). The Investment Framework for Environmental Resources (INFFER) is a tool for developing and prioritising projects to address environmental issues such as water quality and biodiversity decline, environmental pest impacts and land degradation (described in Pannell *et al.* 2009; Pannell *et al.*, 2010). It aims to achieve the most valuable environmental outcomes with the available resources. The development of INFFER grew from experiences implementing the Salinity Investment Framework (SIF3) with two regional catchment organisations: the North Central Catchment Management Authority (NCCMA) in Victoria and South Coast Natural Resource Management in Western Australia (see Roberts and Pannell (2009) and Pannell *et al.* (2008) for descriptions of the many aspects of this work). Following the success of SIF3, the organisations involved requested the development of a similar framework to deal with wider-ranging environmental issues, rather than just dryland salinity.

During 2008 and 2009 INFFER has been implemented with a number of catchment management organisations (CMOs) throughout Australia. Currently, 19 of Australia's 56 regional CMOs (including seven in Victoria, six in Western Australia, five in New South Wales and one in Queensland) have used INFFER or are in the process of trialling it. The Framework has been developed and fine-tuned as it has been implemented. This has allowed users to inform its further development.

In this paper, we report on lessons from this experience. In the following sections we first review factors that we expect will affect the uptake of INFFER by regional NRM organisations. The methods used for assessing the uptake and use of INFFER are then outlined, followed by some early results from the assessment. We then discuss lessons from the implementation of INFFER and their implications. Finally, conclusions are drawn.

Background

We would expect the uptake of INFFER to be affected by factors that are known to be important in the adoption of new technologies. Technologies that are more readily adopted have a clear relative advantage over existing practices or alternative new practices, and can be readily trialled (Rogers, 1995; Pannell *et al.* 2006). The concept of relative advantage, as it applies to the uptake of INFFER by regional organisations, could incorporate a number of aspects. The following points which could affect the relative advantage of INFFER follow from Pannell *et al.* (2006).

- *The short-term learning and implementation costs associated with INFFER.* Using INFFER does involve substantial learning costs and a need for dedicated staff time. Initially, organisations need to decide to either give up the process they are already using and change to using INFFER, or add it to their already busy workload. In the short term, these costs will need to be balanced by success in project bids, and acceptance by relevant authorities (e.g. state governments) of plans/strategies that have been developed using INFFER.

- *The impact of INFFER on environmental outcomes in the medium- to long-term.* The relative importance of short-term and long-term outcomes depends on an organisation's goals and circumstances, but regional NRM organisations might be expected to have long-term environmental goals, within a context of the need to justify expenditure in the short- to medium-term. Organisations will want to be able to show better environmental outcomes from projects developed using INFFER.

- *The impact of INFFER on the riskiness of environmental investment.* The methodology incorporated within INFFER to calculate a benefit-cost index reduces investment risk. Pannell (2009) shows that using incorrect metrics (e.g. weighted additive scoring in inappropriate circumstances, omitting variables, ignoring costs) in prioritisation processes can result in losses as large as 30-60% of total benefits. INFFER is consistent with accepted economic Benefit: Cost Analysis techniques, and incorporates all relevant variables such as value of the asset, impact of the planned intervention, technical feasibility, adoption, adverse adoption, socio-political risk, long-term funding risk, lag until benefits are realised, and short-term costs (for more detail see Pannell et al., 2010).

- *The compatibility of INFFER compatibility with the organisation's existing set of technologies, practices and resources.* INFFER is different from and more detailed than many tools currently used by organisations to prioritise environmental investment (e.g. multi

criteria analysis). Additionally, many CMOs are under-resourced, have limited expertise and may lack capacity to implement a tool such as INFFER (Robins and Dovers, 2007; Seymour *et al.*, 2008).

- *The compatibility of INFFER with existing beliefs and values.* INFFER potentially presents a challenge to organisations still relying on a threat-based or untargeted approach to environmental investment. A previous emphasis on environmental funding for untargeted investment and community involvement (e.g. through Landcare) means that organisations may struggle with an approach which challenges accepted beliefs about the value of previous practices.

- *The perceived and real complexity of INFFER.* The adoption of technologies by landholders is known to be affected by innovation complexity (Rogers, 1995; Wilkinson, 1989). Complexity may increase the intensity of effort required for ongoing management, and the risk of the innovation failing in any given year, each of which reduces the innovation's relative advantage. Complexity increases the tendency for step-wise or partial adoption, apparent in complex technologies such as integrated pest management or integrated weed management.

- *Government policies.* Relative advantage can be affected positively or negatively by government policies. This factor is likely to impact strongly on the uptake of INFFER. If rigorous development and monitoring processes for environmental investment plans and projects are not required of regional bodies by governments, then the incentive to use INFFER could be small.

- *The impact of INFFER upon the organisation's processes.* INFFER has the potential to substantially improve the way NRM organisations undertake prioritisation processes and then develop, monitor and evaluate projects and strategies to achieve environmental outcomes with limited resources. This is a positive in the medium- to long-term, but requires adjustment and possibly mindset changes in the short-term.

- *Self-image and brand loyalty.* Relative advantage can be affected if an innovation changes the social standing of people within the local culture. In Australia there has tended to be a high value placed on the community involvement in Landcare and NRM activities (e.g. Chamala and Keith, 1995; Curtis and Mendham, 2010), and a strong reliance on extension as a tool to achieve environmental outcomes (Pannell and Roberts, 2010). INFFER requires users to answer challenging questions about the value of both these methods to achieve environmental outcomes in many circumstances, and so potentially could be seen as a threat by both landholders and government service providers.

- *The perceived environmental credibility of INFFER.* We would expect environmental credibility to enhance the relative advantage of INFFER. However indications of success in achieving better environmental outcomes will not be clear in the short-term. Also, environmental advantage is not always clearly observable, as is illustrated by recent changes in the understanding of dryland salinity (Ridley and Pannell, 2005). During 2009, INFFER was successful in winning a number of awards, including an Australian Museum Eureka Award for Interdisciplinary Research and a DPI Victoria Future Farming Systems Research Science Award. These awards may contribute to the environmental credibility of INFFER in the eyes of potential users.

Trialability of an innovation can also be affected by a number of factors. Again, the following points which could affect the trialability of INFFER follow from Pannell *et al.* (2006).

- *Trialability is affected by divisibility of an innovation.* Divisibility refers to the use of an innovation on a small scale, or the use of a subcomponent of an innovation package. A degree of divisibility allows small-scale trialing for learning purposes. INFFER can be and has been used by organisations in a small-scale way. However, it appears that full adoption gives a better understanding, and is a better way to use INFFER (this is discussed later in this paper). However, as Wilkinson (1989) found for farmers, there may still be a tendency for organisations to want to pull INFFER apart and adopt only some of its components, or adopt selected components in a stepwise manner.

- *Trialability is affected by observability of an innovation.* Trialing a practice becomes less costly, and thus more likely to be seen as worthwhile, the greater the observability of trial outcomes. But observability of trial outcomes themselves are affected by:

    - long time lags which can delay the observability of clear results from the trial;

    - innovation complexity which increases the difficulty, required effort and time to learn about the innovation's performance from a trial and how best to implement the trial; and

    - skill levels when implementing the trial which will affect the value of the information for decision-making from a trial. Poor implementation is more likely when the innovation is radically different from practices with which the organisation is familiar, and this is the situation for many organisations when they first use INFFER.

In the remainder of the paper we outline and discuss our observations of the uptake and use of INFFER during its initial implementation by some organisations.

Methods

Three main methods, detailed below, have been used to obtain feedback from organisations implementing INFFER. The purpose in obtaining this information is to further develop the Framework, and gain insights on issues associated with implementation, in response to user comments and experiences.

Monitoring and evaluation strategy for the implementation of INFFER

A formal monitoring and evaluation (M&E) strategy for tracking the use of and support for INFFER by regional organisations and state/federal agencies over time has been developed. Assessment data (e.g. of organisational support and understanding of INFFER) are entered by members of the INFFER team in a Microsoft Access database for each six month period. The M&E strategy also collates informal feedback from both the INFFER team and staff of regional organisations and state/federal agencies. These data are entered on a continual basis.

Data being collected for each organisation focuses on:

- basic information about each organisation exposed to and/or using INFFER;

- a record of each Project Assessment Form (PAF) completed by the organisation and a score by the INFFER team of the quality of each PAF based on specified criteria;

- a dated record of comments and feedback (from both members of the organisation and the INFFER team) on activities and engagement with the organisation;

- an INFFER team assessment of level of support for INFFER within regional organisations, and number of people engaged with the implementation process;

- a rating by the INFFER team of the level of understanding within the organisation of INFFER processes and concepts; and

- a more detailed record of the implementation of INFFER Steps 1 to 7 (see Park *et al.*, 2009) by organisations and activities associated with these.

Formal benchmarking questions at INFFER training sessions

Formal training sessions for organisations wanting to use INFFER commenced in July 2009. Material for these training sessions was developed following earlier feedback from organisations about the purpose of INFFER, and issues associated with its use. Initially, a number of draft benchmarking questions with a qualitative focus were applied at these sessions, but they have now developed into a set of four questions to which replies can be quantitatively assessed. Benchmarking information sought from participants at training sessions is:

1. The importance (rated 1 to 7) to their organisation of different factors when considering investment decisions about potential projects designed to achieve environmental outcomes.

2. The importance (rated 1 to 7) of different information sources to their organisation when developing projects to achieve environmental outcomes.

3. The proportion of their organisation's NRM effort which is targeted at spatially explicit assets, rather than broadly applicable projects such as capacity building, awareness raising, and general adoption of "Best Management Practices".

4. Their confidence (rated 1 to 7) that projects being implemented by their organisation and aimed primarily at achieving environmental outcomes meet specified criteria.

It is envisaged that responses to these benchmarking questions will be tracked over time with organisations using INFFER, to assess whether opinions change in a way that is consistent with the purpose of INFFER.

On-line survey

An on-line survey was developed in March/April 2009, and piloted with some staff of the North Central Catchment Management Authority and also two consultants who had worked with INFFER Project Assessment Forms (PAFs). The purpose of the survey was to assist with the monitoring and evaluation of INFFER implementation by obtaining information and perceptions about the use of INFFER by organisations. The survey sought information and perceptions in three areas: 1) understanding of INFFER and level of agreement with key INFFER principles; 2) perceptions about training and support offered by the INFFER team

and experiences using the Project Assessment Form; and 3) perceptions on the usefulness and relevance of INFFER.

In June/July 2009 people from two Victorian CMOs, the North Central CMA and the North East CMA, who had been involved with the implementation of INFFER or had attended information/training sessions were invited to participate in the survey. The CMAs nominated who should receive the email asking for participation in the survey. For the NCCMA 35 emails were sent asking for participation, 23 people logged on to the on-line survey website and "agreed" to participate, but only 19 completed the survey (a response rate of 54%). However, some sections of the survey were not filled in by all respondents. For the NECMA, nine emails were sent asking for participation and three replies were received.

This on-line survey will be used again to survey other organisations as they implement INFFER, and also to re-survey organisations to assess changes in perceptions as they gain further experience using the Framework.

Results and Discussion

Information from INFFER's M&E of implementation

Informal feedback about issues and problems with implementation has been important in contributing to the development of the support that is now available on the INFFER website such as Frequently Asked Questions, Instruction Manuals, project documents, etc. (see www.inffer.org). Additionally, the team has often responded to issues immediately after engagement with organisations in a pro-active way. For example, documents have been prepared for specific organisations to address main concerns that the team felt were apparent from the engagement sessions in a pro-active attempt to manage expectations and correct misconceptions. Often these documents address the more or less standard issues that regularly come up – e.g. the purpose of INFFER, the idea of "the community as an asset", the subjective valuation of assets - as well as specific issues that come up for individual organisations.

Engagement with the Department of Sustainability and the Environment (DSE) in Victoria has been particularly comprehensive. There have been many briefings, meetings and training sessions and feedback from these sessions is encouraged. Staff have been encouraged to speak out about their concerns and issues. DSE issues with the PAF process were carefully considered and incorporated when INFFER was modified in 2009. The DSE has now recommended that INFFER be used to assist in the application of asset-based planning and investment decisions for the next five years (Victorian Government, 2009).

An example of the type of data collected is given in Table 1 for Victorian CMAs. As of December 2009, the data show increased involvement by the North Central CMA compared to June 2009, but a fall off in interest by both the North East and West Gippsland CMAs. Both these CMAs had been involved in a partial or trial implementation of INFFER (e.g. for a small number of specific assets). In contrast to the fall off in interest by these Victorian CMAs, both the NCCMA and the Port Phillip and Westernport CMA undertook formal training sessions offered by the INFFER team. After initial engagement in the first half of 2009, Goulburn Broken and Corangamite CMAs did not have any further contact with the INFFER team in the second half of 2009. Glenelg Hopkins CMA is still keen, and will commence use of INFFER in 2010. North East CMA have advised project developers to use

INFFER for this year's project bids. During the second half of 2009, a number of CMAs in NSW also commenced using INFFER.

Table 1 Level of engagement with selected Victorian CMAs as of June and December 2009

		North Central	Goulburn Broken	North East	West Gippsland	Corang-amite	Glenelg Hopkins
Date of first introduction to INFFER		Nov 07	Sept 07	Mar 08	Sept 08	Oct 08	Feb 09
Percentage of CMA staff exposed to INFFER[a]:	Jun 09	25-50%	25-50%	25-50%	few key staff	few key staff	few key staff
	Dec 09	>75%	25%	few key staff	few key staff	25%	few key staff
No. of local agency staff exposed to INFFER[a]:	Jun 09	5-10	<5	5-10	none	none	none
	Dec 09	11-20	<5	5-10	<5	5-10	none
No. of CMA staff using INFFER to assess projects:	Jun 09	6-10	none	3-5	1-2	1-2	none
	Dec 09	>10	none	1-2	1-2	1-2	none
CMA overall support for INFFER[b]:	Jun 09	3	3	3	2	2	6
	Dec 09	1	4	3	5	3	2
CMA overall under-standing of INFFER[c]:	Jun 09	3	4	3	3	3	6
	Dec 09	2	4	5	4	3	3

[a] "Exposed" means having attended formal presentations about INFFER

[b] "Overall support" was assessed by the INFFER team and was defined by "the overall active participation of the CMA" (1 = very supportive, 2 = supportive, 3 = so-so, 4 = not interested, 5 = negative, 6 = not sure)

[c] "Understanding" of INFFER process and concepts was assessed by the INFFER team (1 = very good, 2 = good, 3 = some, 4 = poor, 5 = very little, 6 = not sure)

Results from benchmarking questions at training sessions

Quantitative benchmarking questions have been answered by participants at training sessions with the North Central CMA (NCCMA) and the Port Philip and Westernport CMA (PPWCMA). Scores for the importance of various factors when considering environmental investment decisions are uniformly quite high (Table 2). The least important factor for both these CMAs was the "quality of available socio-economic information". We would hope that the score for this factor might improve over time, and likewise the score for "cost-effectiveness of investments".

Table 3 shows the scores for importance of information sources outside the organisation when developing projects to achieve environmental outcomes. The INFFER team would rate both these information sources as important, and again the scores are quite high. PPWCMA respondents rate "landholder and community knowledge" as less important than do NCCMA respondents, and this is consistent with their lower score for the relevance of "community capacity building and/or engagement" in Table 2.

Table 2 Importance of factors to the organisation (average scores from NCCMA and PPWCMA respondents) when considering investment decisions to achieve environmental outcomes (scale from 1 = not relevant to 7 = very important)

Factors considered	NCCMA (n = 13)	PPWCMA (n = 10)
Spatial information	5.9	5.6
Quality of available scientific information	5.8	6.0
Quality of available socio-economic information	5.0	4.9
Community capacity building and/or engagement	5.9	5.4
Meeting RCS targets/goals	5.6	5.6
Specifying detailed project goals/targets for environmental outcomes	6.2	5.8
Cost-effectiveness of investments (or "value for money")	5.9	5.4
Ability to get uptake/adoption of practices	5.9	6.0

Table 3 Importance of information sources to the organisation (average scores from NCCMA and PPWCMA respondents) when developing projects to achieve environmental outcomes (scale from 1 = not used to 7 = very important)

Factors considered	NCCMA (n = 13)	PPWCMA (n = 10)
Landholder or community knowledge relevant to the potential project	5.7	5.2
Specific expert scientific information relevant to the potential project	5.9	5.8

Figure 1 shows estimates by respondents of the percentage of their organisation's NRM effort targeted at spatially explicit assets rather than broadly applicable projects such as capacity building, awareness raising, and general adoption of "Best Management Practices". There is a substantial difference in replies between NCCMA and PPWCMA respondents: the NCCMA has been involved with the use of INFFER for much longer than the PPWCMA, and perhaps as a consequence of this, the perceived focus on spatially explicit assets is high. Care needs to be taken interpreting these results as the respondents may not define "spatially explicit assets" in the same way as the INFFER team.

Respondents from both CMAs have relatively low confidence that projects currently being implemented by their organisation met several desirable criteria, especially so for the PPWCMA (Table 4). They have more confidence that their current projects address important regional environmental issues, but less confidence that current projects can achieve the intended environmental outcomes, represent "good value for money", and are well designed to meet the project goal. It is hoped that the use of INFFER by these organisations over time will result in higher scores for these benchmarking questions.

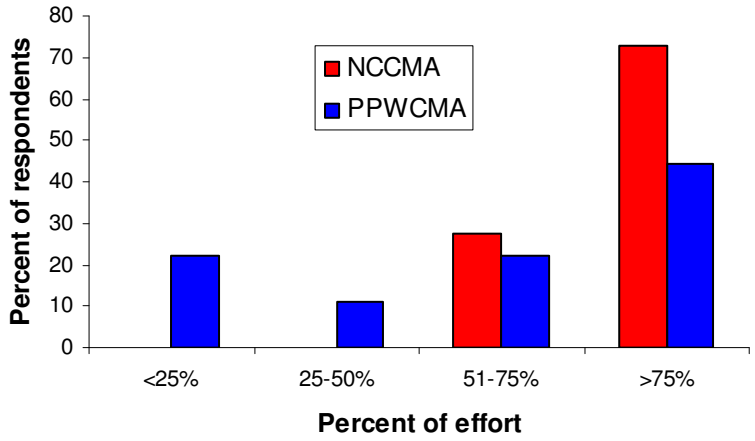

Figure 1. Distribution of respondents' perceptions about the proportion of their organisation's NRM effort targeted at spatially explicit assets rather than broadly applicable projects such as capacity building, awareness raising, and general adoption of Best Management Practices (percentage of NCCMA (n =11) and PPWCMA (n = 9) respondents).

Table 4 Average scores from NCCMA and PPWCMA respondents about confidence that the projects designed to achieve environmental outcomes currently being implemented by their organisation meet specified criteria (scale from 1 = not at all confident to 7 = very confident)

Criteria considered	NCCMA (n = 13)	PPWCMA (n = 10)
The projects address important environmental issues in your region	5.5	5.3
The projects will be able to achieve their intended environmental outcomes	4.6	3.9
The projects represent "good value for money"	4.6	4.3
The projects are well-designed to achieve the project goal	4.8	3.9

Results from the on-line survey

Only survey results for the North Central region are discussed here, as only three people participated in the survey with the North East CMA. The majority of respondents indicated that the NRM organisation that they were most closely associated with was the NCCMA, three respondents indicated the DSE, and four indicated other organisations. Of the NCCMA respondents, three indicated that they held senior management positions, three held project management positions, three were project officers, and three were "other" (from a partnership organisation, local government representative and not specified). The respondents in general indicated they had considerable experience working in NRM/environmental areas, and most said they had experience completing an INFFER Project Assessment Form.

Summated scores (de Vaus, 1995) were constructed for the rating questions that were designed to test underlying perceptions, such as the understanding of INFFER and level of agreement with key INFFER concepts. The summated scores have not been tested statistically for reliability and validity because of the small sample size. As such, the results

are preliminary, until further surveys are conducted. Low scores are "better" than high scores (possible score range is indicated at the bottom of each table). Table 5 gives the summated scores for respondents from the NCCMA for their understanding of INFFER and level of agreement with key concepts.

Table 5 Average summated scores for understanding of INFFER concepts and level of agreement with INFFER concepts for respondents to the NCCMA on-line survey

	NCCMA (n = 12)	**DSE** (n = 3)	**Others** (n = 4)	**Overall** (n = 19)
Understanding of INFFER concepts	10.7 *(1.7)*	12.3 *(2.5)*	13.3 *(4.6)*	11.5 *(2.7)*
Level of agreement with INFFER concepts	13.8 *(2.6)*	17.7 *(2.9)*	12.5 *(1.9)*	14.2 *(2.9)*

Note: Possible score range is 5 to 25, lower scores indicate better understanding of INFFER, more agreement with INFFER concepts. Standard Deviations are in parentheses.

Scores are generally in the middle of the range. Overall, respondents scored better on understanding than level of agreement. Respondents from the DSE had noticeably less agreement with INFFER concepts compared to other respondents. Because of the small sample size, we are not suggesting that this perception is widespread within the DSE, however, it does illustrate the negative opinions about rigorous systematic decision tools that can be encountered within organisations and government departments.

Scores for the individual statements about key INFFER concepts are interesting (Table 6). Of interest are the very mid-range views from both NCCMA and DSE respondents about the statement "INFFER puts too much emphasis on trying to understand the environmental outcomes from NRM investment". Both NRM consultants who had worked on INFFER Project Assessment Forms and piloted the survey "strongly disagreed" with this statement (as would members of the INFFER team), whereas this was the view of only one respondent to this survey. It seems remarkable that people involved in NRM would not consider it crucial to have a clear understanding of the link between actions and environmental outcomes.

Perceptions about the help offered to organisations using INFFER and the difficulties in using the Framework have been useful in further developing support and training for organisations using INFFER. Table 7 shows summated scores for various aspects of experiences using INFFER. Scores are generally in the middle of the range for perception of training and help, confidence about ability to complete an INFFER PAF, and perception of whether it is worthwhile to complete the PAF. Scores from all respondents are relatively high for perception of difficulty in completing an INFFER PAF.

Table 6 Level of agreement with INFFER concepts – NCCMA respondents

Statements	Avg Score*	
	NCCMA (n = 12)	**DSE** (n = 3)
1. INFFER is a useful tool for identifying and prioritising key environmental assets for NRM investment in the region	2.3	3.7
2. The use of INFFER is likely to result in worthwhile projects not being funded.	3.8	4.3
3. INFFER puts too much emphasis on trying to understand the environmental outcomes from NRM investment	2.5	3.0
4. The public: private benefit framework is useful to identify appropriate mechanisms or tools to increase adoption	2.6	2.3
5. It is not appropriate to compare assets across asset classes as is done in INFFER	2.7	4.3

* A lower score means a higher level of agreement with INFFER concepts. Individual scores could range from 1 (strongly agree) to 5 (strongly disagree). Scores shown for statements 2, 3 and 5 have been reversed for consistent scoring.

Table 7 Average summated scores about various aspects of respondents' experiences using INFFER

	NCCMA (n = 6)	**DSE** (n = 3)	**Others** (n = 3)	**Overall**[a] (n = 12)
Perception of training/help offered by the INFFER team	9.2 *(3.1)*	10.0 *(1.0)*	10.7 *(1.5)*	9.8 *(2.3)*
Confidence about ability to complete an INFFER PAF	9.8 *(2.0)*	10.3 *(3.8)*	10.0 *(1.0)*	10.0 *(2.2)*
Perception of difficulty in completing an INFFER PAF	13.0 *(3.0)*	15.3 *(1.2)*	14.0 *(2.0)*	13.8 *(2.5)*
Perception of if it is worthwhile to complete the PAF	9.3 *(3.6)*	14.3 *(3.2)*	8.7 *(1.2)*	10.4 *(3.7)*

[a] Fifteen respondents had indicated they had experience using INFFER, but only 12 rated these questions

Note: Possible score range is 4 to 20, lower scores indicate better perceptions (including less difficulty) and confidence. Standard Deviations are in parentheses.

In written sections of the survey, NCCMA staff respondents said that they found that completing a PAF took on average 3.2 (st. dev. *1.1*) days. When asked about weaknesses of the PAF process the most commonly written response was that is was "time consuming/overly complex" and common suggestions for improvements included that it needed "simplification, clearer explanations" and that "insufficient time was allocated for the task by the organisation".

Table 8 shows the results for questions about the usefulness and relevance of INFFER. Again, scores are generally in the middle of the range, except for the DSE respondents who have a poorer perception of the usefulness and relevance of INFFER. Written questions captured what respondents thought were the strengths of the PAF process with common written answers stating that strengths were that the process "helps project development" and "provides transparency/clarity".

Table 8 Average summated scores of the usefulness and relevance of INFFER.

	NCCMA (n = 9)	**DSE** (n = 3)	**Others** (n = 3)	**Overall** (n = 15)
Perception of usefulness and relevance of INFFER	13.1 *(4.6)*	20.3 *(4.2)*	12.3 *(1.5)*	14.4 *(4.9)*

Note: Possible score range is 6 to 30, with low scores indicating a better perception of usefulness and relevance. Standard Deviations are in parentheses.

NCCMA staff respondents indicated that INFFER had changed the process and/or principles that their organisation followed to prioritise and develop proposals for NRM investment. The majority of the written answers emphasised in a positive way that using INFFER resulted in a more rigorous process being applied, and a more targeted approach. One respondent however made a negative comment: *"We cannot ignore the areas that the community see as high conservation value as this also leads to greater awareness raising and involvement. I understand the theory behind INFFER but it does not adequately account for the social connection to conservation."* This typifies a view that we have commonly encountered, that broad participation of landholders *per se* is more important than the achievement of the highest value environmental outcomes.

Furthermore, the majority of respondents also indicated that INFFER had resulted in a change in the actual NRM investments made in their region. The responses from the NCCMA staff are generally positive, and suggest that NCCMA investment is now more targeted as a result of using INFFER. DSE responses are negative, and imply a concern about PAFs completed to different standards, and consultants being able to make projects "look good". An example of a response from a DSE participant is: *"Poorer quality projects can now receive funding if a good consultant is engaged. The process does not ensure only worthwhile projects are funded."* Of course, same could be said of any process for evaluating project proposals.

A concern about the use of INFFER written by more than one NCCMA respondent is that INFFER does not adequately consider community and political drivers for investment. For example: "*In the reality of NRM investment at the moment, INFFER ticks only one box out of three that describe an 'acceptable' investment program. INFFER predominantly covers the science, but government and community drivers will invariably shape an investment program (e.g. the political drivers for investing in water management in times of drought, community support for NRM work across the region).*" The INFFER team would argue that this is a misconception – that INFFER gives due weight to the science (unlike previous processes) but that it continues to give appropriate attention to community and political drivers that matter to

funders and decision makers. This issue probably needs further emphasis when dealing with groups using INFFER.

Lessons from implementing INFFER with regional organisations

Dealing with issues which commonly arise during implementation

Experience has shown that there are some issues that often arise when first engaging with organisations interested in using INFFER, and often these issues need continual re-visiting. These issues demonstrate the way that many users struggle with what is seen as the complexity of INFFER and its incompatibility with past ways of thinking. Often mindset changes are needed. The attitude of the INFFER team is to listen, discuss and provide explanations and justification for key INFFER principles, but not necessarily to compromise. Examples are given below of issues which continually arise.

- **The desire to include the community as an asset.** Many staff of regional organisations want to think of the community as an asset, commonly making statements such as "the community is our greatest asset". Project assessment using INFFER does not treat the community *per se* as an environmental asset in the same way as rivers, biodiversity, etc. This does not mean that the community can not be important in strategies to protect environmental assets. Capacity building or awareness raising, for example, may be important elements of a project to protect an environmental asset. However, it does not make sense to consider the community as the same sort of asset as a natural asset such as a river. Linked to this issue is the feeling that INFFER "puts too much emphasis on achieving environmental outcomes" (see results from the on-line survey). Many people have become comfortable with the idea that funding to achieve environmental outcomes can routinely be used for other purposes (e.g. awareness raising, community involvement), and results shouldn't solely be assessed against environmental outcomes achieved. The same view is prevalent in government agencies, e.g. "*DSE is still lacking evidence that environmental change being achieved is important to Treasury*" (correspondence from a staff of DSE Vic, Aug 08).

  In working with CMOs and agencies the INFFER team has emphasised the use of the Framework for asset-based investment, whilst acknowledging that investment for general community capacity is also appropriate. There has been a misconception by some users that INFFER should be used for all investment decisions. We have been at pains to stress that the decision of the appropriate breakdown towards assets and capacity building should be made by regions and agencies and that INFFER is then used for the asset-focused portion of the investment portfolio.

- **Rejection of the importance of targeting.** Many people feel strongly that all community members should get some of the funding pie, and that environmental funding should be used to support all landholders to be more environmentally sustainable. Government departments seem to be concerned that targeting will be unpopular, e.g. "*This (targeted investment) will not be acceptable to the community, therefore we will need to have different planks. Some that are nice and woolly and some that are explicit about NRM outcomes. There is a risk if the whole budget is signed over.*" (correspondence from a staff of DSE Vic, Aug 09); and "*It may well take the CMAs in a direction or focus that looks different to the strategic profile they have developed in terms of community awareness. This could spook the staff and board into not adopting the method.*"

(correspondence from a staff of NSW DPI, March 09). The INFFER team believes that this attitude is unrealistic and results in wastage of funds in areas where few if any environmental outcomes can be realised.

- **Concern about the use of a subjective value to score the asset.** The INFFER team often get comments that the identification of assets and the use of V scores is subjective, e.g. "*Initial asset identification is subjective – based on the views of people in the initial workshop, not necessarily based on science*"; and "*Significance assessment and the score out of 100 for the value of V to be used in the cost-efficiency index is subjective*" (feedback after workshop with West Gippsland CMA). These comments are correct; there is a degree of subjectivity involved, as with any prioritisation method used. The initial asset identification is designed to capture the subjective views and preferences of stakeholders. This is appropriate, and indeed is no different to what previous approaches were doing implicitly. The novelty with INFFER is to make these subjective judgements explicit, to support transparent decision making.

- **Concern that dispersed assets score badly compared to more discreet assets.** Some people argue that dispersed assets are disadvantaged in the INFFER process, e.g. "*Many staff are at a loss to see how their geographic area will be able to attract any funding for NRM activities with INFFER's asset-focussed, spatially-specific method …. I admit that I have some reservations as to how it will affect DPI's engagement in areas like pastures/soils/minimum tillage/farming systems which have a diffuse threat-based approach to NRM*" (feedback following NSW workshop). The issue here is that it is often found that projects for dispersed assets like those mentioned have a lower *BCI* than more targeted projects. This is not a weakness of INFFER: it reflects an important reality. Nevertheless, many people have preconceptions about the types of projects that should be funded and are unhappy with any process that does not provide answers that match their preconceptions. In some cases, the preference for dispersed assets perhaps reflects a vested interest in this type of project.

- **Concern that INFFER has limitations when applied to multiple landscape-scale assets.** It is often difficult for people to see how INFFER can deal with multiple assets and ecosystems, e.g. "*The INFFER process requires you to pull ecosystems apart into discrete units (assets). Ecosystems do not function in discrete units. Management actions can have an impact on a number of components within an ecosystem*" (feedback after workshop with West Gippsland CMA); and *"Landscape scale projects are now forced to try and fit into the narrow constraints of the INFFER process"* (respondent to NCCMA on-line survey). The INFFER team believes that landscape-scale projects can be properly and fairly evaluated using INFFER. It is quite possible to define an entire ecosystem as the asset to be assessed in INFFER. The comments probably reflect a concern that landscape-scale projects are often not as cost effective as more targeted projects. Following feedback on this issue, efforts have been made to address concerns about landscape-scale assets and scalability in FAQs on the website.

- **Feedback that the whole process takes too long and is too cumbersome.** Results from all methods of evaluation support this as an issue for many users. In response to feedback a concerted effort has been made to simplify the process. A document which details various ways parts of the whole process can be used separately is provided on the website (Pannell *et al.*, 2009). The INFFER team is now inclined to take a hard line on requests to further simplify INFFER. Our view is that it has already been simplified to the point

where it does not contain anything that should be considered optional, and in fact represents a basic level of due diligence for the expenditure of millions of dollars of public funds.

The importance of support through training

The issues raised above all indicate a need for users to be supported through training, and during 2009 comprehensive training materials have been developed and training offered to all users. Organisations which approach the INFFER team about using the tool are now required to undertake formal training sessions before they begin using INFFER. The benefits of training have become clear at training sessions. For example, training notes from a session with the NCCMA in September 2009 indicate that after the presentation on Project Assessment Forms (PAFs) the participants were concerned about subjectivity. However, later in the training session after they had completed a PAF themselves they were much happier about how the subjective assessment of a V score was used. This is a good indication of the sense and necessity of conducting training sessions. It removes a lot of the questions and issues that people have about the process.

Hard decisions made about the level of implementation to support

When INFFER was first developed, the team supported organisations to conduct limited trials with the process (e.g. assessment of a small number of assets by several CMOs). During 2009, we decided not to support any more limited trials, opting only to support a full implementation process. This decision counters evidence that "trialability" is an important factor that positively influences uptake of new technologies (e.g. Rogers, 1995; Pannell *et al.*, 2006). The reason for this decision grew from observations that limited trials seem to raise too many questions/issues resulting from limited understanding. Often questions and issues get answered in the process of learning about and doing a full implementation of INFFER.

Use of INFFER is now on a demand-pull basis – organisations must approach us with an interest in using INFFER, but the team imposes conditions of only providing support for a full implementation process (i.e. involvement of the CMO staff in training, and the process must in general follow INFFER Steps 1 to 7). Experience has shown that implementation of INFFER will only be successful when there is: 1) a committed CEO who is willing to lead; 2) a committed Board; 3) committed senior staff who are also prepared to support it and are open to change, and 4) the CMO is prepared to commit a high quality staff members time to the process. All the partial trials had at least one and usually more of these factors missing.

It remains to be evaluated whether this hard-line approach on the need for full implementation will be possible to maintain. A comment from a senior management respondent to the NCCMA on-line survey suggests there may be difficulties ahead with this approach: "*At the moment, expectations around its implementation are a bit too pure and not pragmatic/sensitive to other competing commitments.*"

Reluctance to change existing institutional systems and processes

Not surprisingly, there is often resistance to the idea that change is needed. For example: "*There is a wide opinion among CMA staff that the current processes and Program Logic they apply in development of business plans is sufficiently rigorous and that INFFER is certainly an embellishment to that but the additional effort may not be warranted or provide sufficient value"* (correspondence from a staff of NSW DPI). The INFFER team will need to continually stress and ultimately provide proof of the advantages offered by adopting the

Framework, and also endeavour to make it as compatible as possible with existing processes. There have been some interesting comments made by users about the advantages obtained from using the Framework, e.g. *"The transparency has reduced the political sensitivity of tough decisions. It supports the CMA to make tough decisions. In addition, it allows the CMA to demonstrate the relative merit of projects and interventions to investors who previously may have preferred different projects or policy approaches."* (respondent to the NCCMA on-line survey). In the long run, there is a need for documentation of better environmental outcomes being achieved with the use of INFFER.

Role for Government

Difficulties associated with implementing INFFER within existing institutional systems and processes point to a need for clear strong institutional incentives to use INFFER. If the new approach being advocated is more time consuming and rigorous than approaches currently in use there will be resistance to adoption in the absence of incentives to do so. State and Federal Governments could assist by demanding more rigorous approaches be used for developing NRM projects. Although the wording of the business plan suggests otherwise, the 2009-10 requirements for funding bids for Caring For Our Country (CfOC) funds were not rigorous, even though INFFER was mentioned as a tool that could be used to assist with the development of funding bids. The Victorian State Government has recently moved to incorporate INFFER principles in the development of Regional Catchment Strategies for Victorian CMAs. This follows a lengthy and frank period of engagement and discussions between the Victorian DSE and the INFFER team. The newly released White Paper (Victorian Government, 2009, p. 32) states that:

> "INFFER will be utilised for the next five years or until an alternative is developed. …
>
> **Actions**
>
> 3.3.3 Utilise INFFER and further develop other decision support tools for applying asset-based approaches to planning and investment for flagship areas and biolinks by the 2011/12 Victorian Investment Framework round.
>
> 3.3.4 Provide training and support in the application of INFFER and other decision support tools by 2011".

Another role for Government would be to provide support for regional organisations to be trained to use INFFER. This is likely to be an on-going requirement.

Conclusions

There are indications from at least one Victorian CMA, the North Central CMA, that the use of INFFER has resulted in a more rigorous, targeted and transparent NRM investment process. Furthermore, staff of this CMA also said that this process has resulted in a change in the actual investments made by the CMA, to a more targeted strategy. This CMA has been using INFFER for the longest time, and has undergone the most training, of any CMO currently using INFFER. The overall organisational support for INFFER is high.

It is clear that INFFER shares common issues associated with many conservation technologies: it is perceived as complex despite efforts to simplify the use requirements; it is often incompatible with past practices and thinking; there can be resistance because INFFER

challenges past activities and tends to favour different projects and approaches; results of trials or implementation can be difficult to observe because of long time scales needed for environmental outcomes, or funding being affected by many factors other than the quality of the project bid: and, there can be a lack of incentive to pursue more rigorous processes. The INFFER team makes a conscious attempt to be responsive to feedback and issues, and accept the need to continually go over "the basics" with users, potential users, funders and policy officers. We have learnt to endeavour not to be too critical: even constructive criticism of draft PAFs is sometimes rejected as too harsh. The effort required to continually deal with the same issues and concerns slows down the speed of delivery but is essential. It is hoped that the new training material and more formal training process will assist with understanding and skills, and initial indications are that this is the case.

The INFFER team is currently resisting both a "simpler" INFFER, beyond substantial simplifications that have now been made to the initial Project Assessment Form, and requests to support partial implementation. The former is to preserve the integrity of the Framework, and the latter a result of initial monitoring of the implementation process with several organisations. It remains to be seen if this approach will be sustainable, given that adoption theory supports the value of simplicity, and the inevitability of partial adoption and adaptation of technologies. In the long term, as organisations using INFFER become familiar and confident with the process, there will probably be little real control over how the technology is used and adapted.

Finally, institutional support will be pivotal in influencing the uptake of INFFER. This is clearly evident in Western Australia, where organisations initially interested in INFFER say openly that they are waiting for decisions on what processes will be required by authorities for State NRM funding. In Victoria, where engagement between the INFFER team and the DSE has been ongoing, open and often with lack of consensus, there has now been a decision to require the use of INFFER at the state level. No other Australian State has so far been prepared to take such a pro-active stance on the use of INFFER, and without such a move it seems unlikely that the tool will be adopted by more than one or two regions in other States. The developments in Victoria will enable us to see the effect of a positive institutional environment on the uptake of this technology.

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