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Changing the direction of environmental investment in Australia: Learnings from implementing INFFER

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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, biodiversity decline, environmental pest impacts and land degradation. INFFER is an asset-based, targeted, and outcome-focussed approach to environmental investment, and as such is a very different and more rigorous approach to prioritising possible environmental projects than used previously by most catchment management organisations (CMOs) in Australia. From 2008 to 2010 INFFER has been trialled with CMOs. Evaluation and benchmarking data obtained at 2-day INFFER training sessions with seven CMOs in three eastern Australia states are reported. Before commencing to use INFFER, CMO staff are generally confident about the current decision-making processes for environmental investment used within their organisation. In some cases, this initial perception challenges their acceptance of a new approach to investment decision-making. Key issues when implementing INFFER include concerns about changing the direction of CMO investment, concerns about compatibility with funder requirements, and various issues associated with specific aspects of the Framework. Perceived complexity of INFFER, 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. Despite these difficulties INFFER is being used by a number of CMOs. However, it is likely that widespread adoption of INFFER, or indeed any other transparent and robust process, will only occur with greater requirement from governments for environmental decision making by regional NRM bodies that is more focused on outcomes and cost-effectiveness.

Changing the direction of environmental investment in Australia: Learnings from implementing INFFER

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1. Introduction

In a number of countries, including Australia, Canada, the United States of America, and parts of Europe, governments have explored the effectiveness of devolving responsibility for natural resource management (NRM) in part to regional organisations (Leach and Pelkey 2001, Shaw and Kidd 2001, Paton et al. 2004). This approach recognises the importance of local knowledge to identify and implement needed actions at the regional level, and encourages a partnership approach between governments and regional communities for NRM decision-making. In Australia, since 2000, responsibility for around A$1 billion of public funding (ANAO 2008) has been devolved to 56 catchment-based regional bodies. Various institutional arrangements exist for these organisations in different states (see Pannell et al. 2008a) but common to all regional catchment management organisations (CMOs) is the responsibility for the development and implementation of investment strategies to address natural resource management issues.

The effectiveness of government partnerships with regional bodies for NRM management has been reviewed and found wanting for a variety of reasons (e.g. Ryan and Bidwell 2007, Robins and Dovers 2007a). Additionally, in Australia, investment in natural resource management by regional organisations has been criticised for weak monitoring and poor achievement of environmental outcomes (e.g. Auditor General 2004, 2008). Lack of investment targeting in spatially heterogeneous environments has been identified as a cause of poor environmental outcomes (e.g. Yang et al. 2005, Hajkowicz 2008, Pannell and Roberts 2010). In an effort to address this, various tools, models and frameworks have been developed to assist with the targeting and prioritisation of environmental investments (e.g. the Assets, Threats and Solvability model (ATS) (Hajkowicz and McDonald 2006), Multicriteria Landscape Assessment and Optimisation (MULBO) (Meyer and Grabaum 2008), Investment Framework for Environmental Resources (INFFER) (Pannell et al. 2009a, 2010)).

The Investment Framework for Environmental Resources (INFFER) is a tool for developing and prioritising projects to address environmental issues such as water quality, biodiversity decline, environmental pest impacts and land degradation (Pannell et al. 2009a). 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. (2008b) for descriptions of the many aspects of this work). The organisations involved requested the development of a similar framework to deal with a wider-range of environmental issues, rather than just dryland salinity.

INFFER takes an asset-based approach to environmental investment, and is more rigorous than approaches currently used by CMOs. For example, it explicitly considers the links between action and outcomes, and the links between project delivery mechanisms and landholders' decisions to change land use. It requires a program of community consultation to identify assets; a specific, measureable, time-bound goal to be stated for projects; and assesses the relative cost-effectiveness of different investment options using a formalised Project Assessment Form (PAF). It also analyses the most appropriate type of policy mechanism to change land use for each project and includes checks for internal consistency of information.

From 2008 to 2010 INFFER has been implemented with a number of catchment management organisations (CMOs) throughout Australia. Currently, 20 of Australia's 56 regional CMOs (including six in Victoria, six in Western Australia, six in New South Wales, and one each in Queensland and the Australian Capital Territory) have used or trialled the use of INFFER. The Framework has been developed and fine-tuned as it has been implemented. This has allowed users to inform its further development.

State governments in Western Australia, Victoria and New South Wales have been involved in a range of INFFER assessments. Its role as a guiding framework at the state level is under consideration. It is a recommended tool within Victoria's new Land and Biodiversity Policy White Paper (Department of Sustainability and Environment 2009), and was the only environmental planning tool recommended by the Australian Government in the 2009 round of applications under the Caring for our Country program. INFFER, or aspects of INFFER, have also been used by a number of overseas groups. A Dutch group applied INFFER's public:private benefits framework to conduct ex-ante evaluation and planning of public policies for sustainable agriculture at the landscape level (Parra-López et al. 2009). The first northern hemisphere trial of INFFER is underway in partnership with the University of Florence. There are also plans to pilot INFFER in three provinces of Canada, and interest from the USA, the Netherlands and Ireland.

In this paper, we report on our learnings from the INFFER implementation process. As at September 2010, eight Australian CMOs (three in Victoria, one in WA, two in NSW, one each in Queensland and the ACT) continue to be committed to use INFFER for environmental asset identification and prioritisation, project development and/or development of regional catchment strategies. Other CMOs that have trialled INFFER have elected not to continue to use it for various reasons, although most still speak positively about their experience in trialling it. The purpose of this paper is to explore and discuss the reasons for non-uptake of INFFER.

The use/non-use of INFFER is discussed in the context of factors and circumstances that are known to favour adoption of a new technology. 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). There are many factors influencing the relative advantage of using a new technology. A short and incomplete list of these factors includes: the benefits both in the short and medium-to-long term of using the technology; the costs associated with implementing the

technology; the compatibility of the technology with existing practices, beliefs and values; the complexity of the technology; and government policies (see Pannell et al. 2006 for a more detailed discussion).

In the following sections the methods used for assessing perceptions about the relevance and use of INFFER are outlined, followed by results from evaluation and benchmarking surveys. We then discuss lessons from the implementation of INFFER and relate this to the literature about the uptake of new technologies. Finally, conclusions are drawn.

2. Methods

Three main methods have been used to obtain feedback from organisations implementing INFFER: a formal monitoring and evaluation strategy based on six-monthly assessment of progress made and feedback received; benchmark and evaluation questions at 2-day training sessions, and an on-line survey. The purpose in obtaining this information is to gain insights into issues associated with implementation, and to further develop the Framework in the light of user comments and experiences. Some early results from the first on-line survey are discussed in Marsh et al. (2010). In this paper we outline and discuss results from benchmark and evaluation questions asked at 2-day training sessions with CMOs.

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. At the commencement of each training session written replies to a set of four quantitative benchmarking questions are collected. The data are:

- The importance (rated 1 to 7) to their organisation of eight factors when considering investment decisions about potential projects designed to achieve environmental outcomes. The factors were: spatial information, quality of available scientific information, quality of available socio-economic information, community capacity and/or engagement, meeting Regional Catchment Strategy targets/goals, specifying detailed project goals/targets for environmental outcomes, cost-effectiveness of investments (or "value for money"), and ability to get uptake/adoption of practices.

- The importance (rated 1 to 7) of two different information sources (landholder or community knowledge relevant to the potential project, and specific expert scientific information relevant to the potential project) to their organisation when developing projects to achieve environmental outcomes.

- 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".

- Their confidence (rated 1 to 7) that projects being implemented by their organisation and aimed primarily at achieving environmental outcomes meet four specified criteria, i.e. that the projects: address important environmental issues in their region, will be able to achieve their intended environmental outcomes, represent "good value for money", and are well-designed to achieve the project goal.

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

In addition to the benchmarking questions, written replies to a small number of evaluation questions have been collected after each training session. The aim of these questions is to identify aspects of INFFER that present difficulties, and concerns about implementing INFFER. Respondents are first asked to score (1 to 5) how confident they feel with the INFFER process. Three open-ended qualitative questions then ask respondents to:

- Identify which aspects of the process they feel more/less confident with;

- Identify in what ways INFFER is similar/different to their current CMO practice, and

- Identify any issues of concern if INFFER were to be implemented by their CMO.

In the results and discussion, quotes used are taken from the written answers to the qualitative evaluation questions. In some cases text in brackets has been added to give context to the written responses.

3. Results

3.1 Results from benchmarking questions at training sessions

Quantitative benchmarking questions have been answered by participants at seven CMO training sessions. Average scores for the importance of eight factors when considering investment decisions to achieve environmental outcomes are shown in Table 1 for each of the seven CMOs. These scores reflect knowledge and attitudes prior to commencing work with the INFFER framework. The scores are generally high: reflecting that CMO staff recognise the importance of many factors that should influence investment decisions, and indicative of overall CMO confidence in the way they go about making their current investment decisions. However, based on our experiences working with these groups, there appears to be considerable over-confidence by CMOs in the quality of their methods for developing and prioritising projects. For example, the average scores for VIC 3 are 6.0 or more for six criteria, and for NSW 1 and ACT the scores are 6.0 or more for five criteria. "Quality of available socio-economic information" is consistently scored of lower importance than other factors across all groups: no group scores this higher than 6.0 on average, and the overall average score is the lowest at 5.0. This is consistent with previous research which indicates that socio-economic information is not given a high priority by CMOs (Seymour et al. 2008). Highest overall average scores were recorded for "specifying detailed project goals/targets for environmental outcomes" and "ability to get uptake/adoption of practices", at 6.1 and 6.0 respectively. However, in our experience working with CMOs, these factors are generally considered poorly when selecting investments.

Table 2 shows the scores for importance of information sources outside the organisation when developing projects to achieve environmental outcomes. Again, the scores are quite high. The NSW 1 group score the importance of expert scientific information

particularly highly, and the ACT group score the landholder and community knowledge higher than the other groups. Overall, the importance of scientific information is scored slightly higher than community knowledge: with mean scores of 6.0 and 5.6 respectively.

Figure 1 shows estimates by respondents of the percentage of their organisation's NRM effort targeted at spatially explicit assets. It is noticeable that there is wide range of responses from NSW 1, QLD 1 and ACT compared to the Victorian groups: respondents from the former groups have very different ideas about what percentage of their projects target spatially explicit assets. The majority of respondents from the Victorian groups tend to think that more than 50% of their projects target spatially explicit assets, although our experience working with these groups suggests that this is an overestimate (e.g. Pannell et al. 2011). It is also possible that the respondents may not define "spatially explicit assets" in the same way as the INFFER team; i.e. a spatially explicit asset being defined as a thing or place valued by people that can be drawn on a map.

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

Factors considered	VIC 1[a] (n = 13)	VIC 2 (n = 10)	VIC 3 (n = 13)	VIC 4 (n =17)	NSW 1 (n = 8)	QLD 1 (n = 18)	ACT (n = 12)	Mean (n = 91)
Spatial information	5.9	5.6	6.5	5.5	6.4	5.7	5.9	5.9 $(1.1)^{b}$
Quality of available scientific information	5.8	6.0	6.1	4.9	6.1	5.7	6.1	5.7 (1.3)
Quality of available socio-economic information	5.0	4.9	5.2	3.8	5.8	5.1	5.8	5.0 (1.4)
Community capacity building and/or engagement	5.9	5.4	6.1	5.0	6.3	6.1	6.5	5.9 (1.2)
Meeting RCS targets/ goals	5.6	5.6	5.8	4.7	5.6	5.8	6.1	5.6 (1.6)
Specifying detailed project goals/targets for environmental outcomes	6.2	5.8	6.5	5.8	5.6	5.9	6.4	6.1 (1.1)
Cost-effectiveness of investments (or "value for money")	5.9	5.4	6.3	5.2	6.1	5.9	5.8	5.8 (1.1)
Ability to get uptake/ adoption of practices	5.9	6.0	6.3	5.7	6.4	6.2	6.1	6.0 (1.1)

a Training dates were: VIC 1 5-6 November 2009, VIC 2 15-16 December 2009, VIC 3 28-29 July 2010, VIC 4 3-4 May 2010, NSW 1 30 Sept-1 Oct 2010, QLD 1 2-3 Sept 2010, ACT 8-9 Sept 2010.

Table 2 Importance of information sources to the organisation (average scores from CMO respondents) when developing projects to achieve environmental outcomes (scale from 1 = not used to 7 = very important)

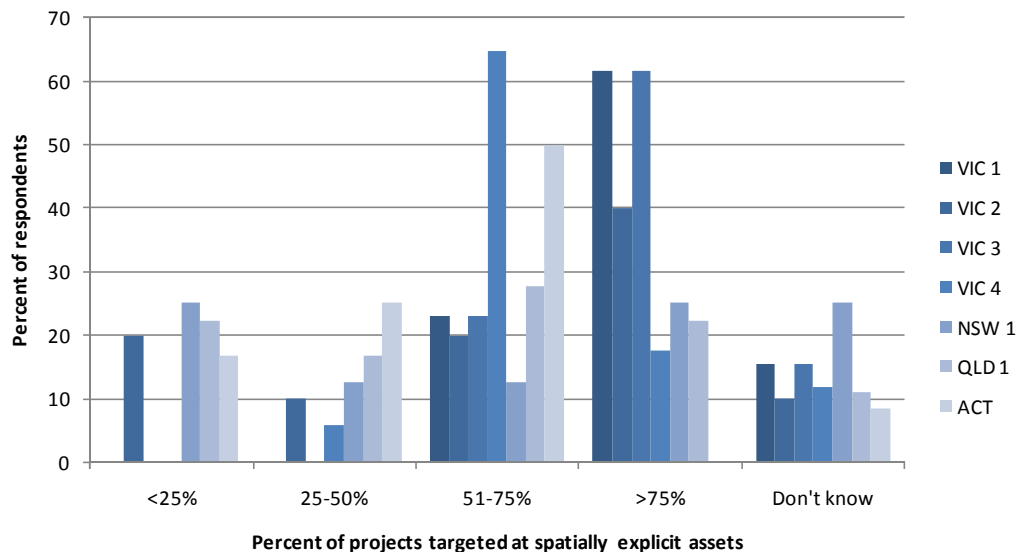| Factors considered	VIC 1 (n = 13)	VIC 2 (n = 10)	VIC 3 (n = 13)	VIC 4 (n = 17)	NSW 1 (n = 8)	QLD 1 (n = 18)	ACT (n = 10)	Mean (n = 91)
Landholder or community knowledge relevant to the potential project	5.7	5.2	5.4	5.0	5.9	5.9	6.3	5.6 *(1.2)*
Specific expert scientific information relevant to the potential project	5.9	5.8	6.0	5.7	6.5	5.8	6.3	6.0 *(1.0)*

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 CMO respondents).

Compared to the importance of the eight factors on investment decisions (Table 1), respondents from all CMOs have relatively lower confidence that projects currently being implemented by their organisation met several desirable criteria (Table 3). They have more confidence that their current projects address important regional environmental issues (less so for the ACT group), but less confidence that current projects can achieve the intended environmental outcomes, represent "good value for money", or are well designed to meet the project goal. Overall results for these scores are shown in Table 4, and illustrate that the range of scores is considerable (although standard deviations of the means are quite low). There was more confidence that CMO's projects address important environmental issues: mean 5.4 with 14 percent of respondents being "very confident" (score 7) about this. There was less confidence that

CMO's projects will achieve environmental outcomes: mean 4.7 with five percent "not confident" (scores 1 and 2) about this. These results suggest that the CMOs undergoing training to implement INFFER are doing so because they are looking for ways to improve their current investment strategies.

Table 3 Average scores from CMO 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	VIC 1 (n = 12)	VIC 2 (n = 9)	VIC 3 (n = 12)	VIC 4 (n=16)	NSW 1 (n = 7)	QLD 1 (n = 18)	ACT (n = 10)
The projects address important environmental issues in your region	6.0	5.9	5.7	5.2	5.9	5.1	4.9
The projects will be able to achieve their intended environmental outcomes	5.0	4.3	5.0	4.8	4.7	4.3	4.4
The projects represent "good value for money"	5.0	4.8	5.0	4.8	4.4	4.8	4.5
The projects are well-designed to achieve the project goal	5.2	4.3	5.7	4.8	4.4	4.6	4.8

Table 4 Overall scores from CMO respondents about confidence that the projects designed to achieve environmental outcomes currently being implemented by their organisation meet specified criteria: address important environmental issues, will achieve environmental outcomes; represent value for money; and are well-designed (scale from 1 = not at all confident to 7 = very confident)

Scores	Issues (n = 84)	Outcomes (n = 84)	Value (n = 82)	Design (n=83)
Average	5.4	4.7	4.8	4.9
Standard deviation	*1.1*	*1.2*	*1.2*	*1.3*
Range	2-7	1-7	2-7	2-7

3.2 Results from evaluation questions at training sessions

Most evaluation questions asked were open-ended questions, but respondents were asked to score "how confident they felt with the INFFER process" at the conclusion of the 2-day training sessions. Results are shown in Table 5, and the means reflect scores generally indicate a mid-range of confidence (i.e. around 2.5), trending towards more

confidence (i.e. lower scores), with the exception of VIC 2 and VIC 4 who had less confidence with the process than other groups.

Table 5   CMO scores for confidence with the INFFER process after the 2-day training session (1 = very confident to 5 = not confident)

Scores	VIC 1 (n = 13)	VIC 2 (n = 9)	VIC 3 (n = 14)	VIC 4 (n= 15)	NSW 1 (n = 8)	QLD 1 (n = 17)	ACT (n = 9)
Average	2.2	2.7	2.4	3.3	2.0	2.0	2.1
Standard deviation	0.7	0.9	0.7	0.8	0.5	0.6	0.3
Range	1-4	2-4	1-3	2-4	1-3	1-3	2-3

As well as the seven CMOs already mentioned, an additional two NSW CMOs provided responses to the open-ended evaluation questions. Respondents were asked which aspects of the process they felt more/less confident with. It is evident from the responses that participants considered their "confidence in the process" both in terms of the quality of the process, and also how confident they were about their own and their CMO's ability to use it. Aspects that are consistently mentioned by respondents as ones they are more confident with generally refer to the quality of the process and include:

- understanding of the INFFER process/steps overall;

- the logic behind the Project Assessment Form (PAF) and calculation of the Benefit Cost Index (especially since the incorporation of the e-PAF in training sessions in 2010); and

- the overall rigour of the process.

Aspects that are consistently mentioned by respondents as ones they are less confident with are more diverse, and include concerns about both quality and ability to use:

- the subjectivity of numbers involved in the Benefit Cost Index calculation and V score (the V score is a subjective score, ranging from 1 to 1000, of the natural asset's overall significance, importance, utility or value which indicates its overall value relative to other assets – see Pannell et al. 2009a);

- setting SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound) and costing projects;

- the ability to get adequate and/or quality information needed to complete the PAF;

- the ability of their organisation to implement the process; and

- the compatibility of the process with funding requirements.

One aspect of the process, the environmental asset identification and assessment process, was identified by some participants as something they felt more confident about and by others as something they felt less confident about. As some CMO staff had already participated in an environmental asset identification process before INFFER training, it is perhaps not surprising that this is something with which they felt

more confident. However, it is also something that some feel less confident about after the training, and this is usually associated with issues about valuing the asset (the *V* score). Some participants struggle more than others with the idea of explicitly valuing environmental assets by putting a number on this value. This is discussed further in the next section of the paper.

4.   Learnings from implementing INFFER with regional organisations

4.1 Issues which commonly arise when first engaging with a CMO
Experience has shown that there are some issues that arise when first engaging with organisations interested in using INFFER, and these often need continual re-visiting and discussion. 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. In the open-ended evaluation questions respondents often comment that the process is different, and specifically that it is more detailed and rigorous than processes they have used in the past, for example: "(INFFER requires) more detail for justifications, focuses on regional assets, benefit cost index" (VIC 4); and "(INFFER is) different - far more thorough and allows different themes to be compared" (NSW 1). Often mindset changes are needed. Examples are given below of seven concerns which arise in most CMOs.

The community as an asset
Many staff of regional organisations want to think of the community or land managers as an asset, commonly making statements such as "another asset is the land managers" (NSW 1). Project assessment using INFFER does not treat the community *per se* as an environmental asset in the same way as rivers, biodiversity, etc. When using INFFER, we assume that the purpose of the public funding is to improve environmental and natural resource outcomes: not to invest in the community for its own sake. This does not preclude the notion that the community is often vitally important in implementing actions to protect environmental assets. Capacity building or awareness raising, for example, may be important elements of a project to protect environmental assets (e.g. Curtis and Mendham 2010).

Concerns about the implications of targeting
The INFFER approach aims to target investment to areas where environmental outcomes can be achieved cost-effectively, because failure to do this results in a potential wastage of scarce funds in areas where few environmental outcomes can be realised. Many people feel strongly that all community members should get a share of funding, and that environmental funding should be used to support all landholders to undertake more environmentally sustainable works/practices. This is often expressed in a way that sees targeting as inequitable, especially if landholders are doing the "right thing" (e.g. removing weeds). There is a feeling that they should get financial rewards for doing this, even if it does not achieve the environmental benefit that the public funds are targeted at. There are also often concerns that targeting investment will result in the CMO becoming disengaged with some landholders, for example: "a lot of high value assets are located in or near coastal areas and focussing on projects only in these areas will cause disengagement with western landholders" (QLD 1). On the positive side, although respondents often felt uncomfortable about targeted investment, some can see that using INFFER will help: "I think I will always have difficulty with the idea that we

can't 'save' everything but I think this process will at least ensure we do a good job at saving what we can" (VIC 2).

Changing the direction of investment
Concern about targeting and loss of focus on community capacity can result in a generalised concern about changing the direction of CMO investment. This was identified clearly by respondents in the evaluation questions as a potential issue for their organisation, for example:

- "(We need to be) aware that some projects we like doing will not score favourably in INFFER" (QLD 1);

- "I think it will be challenging as ACT currently invests a lot in community capacity building" (ACT);

- "(There may be) resistance to change, resistance to unpleasant answers" (VIC 3); and

- "(This is a) different way of doing business - risk of Board or staff opposition to findings of the INFFER process" (NSW 1).

This is consistent with adoption theory: reluctance to change existing processes and actions is a common response to new ideas/technologies, especially if the changes to be made are substantially different.

In Australia there has tended to be a high value placed on 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). 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 that results from that funding should not be assessed on the basis of environmental outcomes achieved. INFFER requires users to answer challenging questions about the value of community involvement and extension to achieve environmental outcomes in many circumstances, and so potentially could be perceived as a threat by CMOs, landholders and government service providers. Hence for some agencies and landholders, INFFER could be perceived as providing little benefit.

Concern about the use of subjective values to score the asset and calculate the Benefit Cost Index
Responses to the open-ended evaluation questions often commented that the identification of assets and the use of *V* scores to value them are subjective and difficult, for example: "Initial valuation of assets (is) very subjective. No described basis of how values were determined" (NSW 1), and "*V* score can be difficult to determine for many assets that are listed" (VIC 1). Some people become concerned about the potential for lack of consistency in ascribed values: "(I'm not confident about) valuing assets and consistency of application by different staff within same organisation" (QLD 1). Furthermore, others are concerned that the whole process to arrive at the Benefit Cost Index (BCI) is subjective: "(The process) still requires a series of highly subjective judgements (despite giving appearance of being very methodical and objective) e.g. (judgements about) long term funding or seasonal risks" (NSW 3).

It is true that subjective judgements are required for a number of the elements of the project assessment form. However, these comments seem to reflect a lack of appreciation about the degree of subjectivity involved in existing decision processes. INFFER considers additional elements that are often not considered in existing processes, and it makes judgements about these elements explicit and transparent, but it does not involve any greater degree of subjectivity than existing processes. Indeed, judgements about elements such as asset values are necessarily subjective.

There is no doubt that the asset scoring process can be difficult and that it is important to maintain a consistency between values ascribed to assets in a region. The INFFER team has observed that people tend to exaggerate the value of small assets, sometimes by a considerable amount. It may be possible in the future to develop a system of providing guidance to them about realistic values based on transfer of non-market values. It is also desirable that senior CMO staff should review asset V scores as a whole for consistency after asset identification and valuing workshops, where values for different asset types (e.g. biodiversity, rivers, cultural sites) have been determined by different groups of people.

Not all people are worried about the subjectivity of INFFER. Some participants at training sessions see the explicit subjective process underlying INFFER as providing benefits, for example: "Looking forward to applying it to real projects. Gives a robust group (stakeholder) oriented approach to subjective projects - much needed" (NSW 1); "(The INFFER process has the) ability to divest projects of parochial local interest and maintain objectivity" (VIC 2); and "I like logic and to be able to defend, justify and validate my decisions" (VIC 4).

Concern that diffuse agricultural assets have a lower BCI than more discrete assets
It has been consistently found that some people argue that agricultural assets are disadvantaged in the INFFER process, for example: "Soil is a major asset but I find it will be very hard to consider such a diffuse asset under this process" (NSW 3).
When using INFFER it is often found that projects for dispersed agricultural assets like agricultural land and soil have a lower BCI than more targeted projects. This prompts comments like: "BCI as an indicator of worth of project or to compare like with like. But how can we compare koalas with soil projects fairly?" (NSW 2). Lower BCIs for projects for dispersed assets is not a weakness of INFFER: it reflects an important reality. It often is possible to generate more valuable outcomes per dollar invested with more targeted projects than with highly dispersed projects. 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 agricultural assets perhaps reflects a vested interest in this type of project. In other cases, it may reflect the preference for broad participation in projects, as noted above.

Concern that INFFER has limitations when applied to multiple assets
It is often difficult for people to see how INFFER can deal with multiple assets and ecosystems, for example: "(I'm not confident about INFFER's) application to large, landscape projects" (VIC 3); or how different projects can be integrated into CMO

programs, for example: "(I'm not confident about) using the projects developed using INFFER and integrating them into a program that addresses Victorian Investment Framework priorities" (VIC 4). It is quite possible to define an entire ecosystem as the asset to be assessed in INFFER, but it remains difficult to successfully communicate how INFFER can deal with broad landscape scale assets. Following feedback on this issue, efforts have been made to address concerns about multiple assets and scalability in FAQs on the website. Additionally, a case study using INFFER to investigate investment options was conducted on a large diverse environmental asset, the Gippsland Lakes in Victoria.

Feedback that the whole process takes too long, is too difficult, and will be challenging for the CMO to implement
Results from evaluation and informal feedback suggest that the implementation of INFFER by CMOs is as an issue for many potential users. For example: "A very detailed procedure, we have some that refuse to follow process, i.e. too much work or too hard" (NSW 2). In response to early feedback the process was simplified in 2009, and an e-PAF with embedded FAQs developed in 2010. Feedback from users is still being used to fine tune areas that are proving difficult such as *V* scores and estimates of adoptability of planned interventions.

Perceived difficulty can result in users wanting to use parts of INFFER rather than the whole approach: for example, the initial asset filtering process has been seen by many CMOs as useful and possible to implement (and is also often compatible with previous processes), but some CMOs have baulked at the idea of going on to undertake detailed assessments of projects (using the INFFER PAF process). Experience with the adoption of agricultural innovations, particularly complex innovation, shows that they are often adopted in a step-wise and partial manner (Wilkinson 1989, Bantilan and Padmaja 2008, Robertson et al. 2011). Although partial uptake of INFFER is not encouraged, a document which details various ways parts of the whole process can be used separately is provided on the website (Pannell et al. 2009b).

4.2 The importance of support through training
The issues raised above all indicate a need for users to be supported through training and an accessible "INFFER help-desk". During 2009 and 2010 comprehensive training materials were developed and training offered to all users. Formal training sessions are now required before organisations begin using INFFER. The benefits of training have become clear, and are reflected in written comments made in the evaluation. For example: "(My confidence in the process) grew over two days – will have to practice it more" (QLD 1); and "Very interesting and new, feel quite comfortable especially after the second day and being shown the online e-PAF (FAQs, calculations and system)" (NSW 1).

There is evidence that after the 2-day training some participants become more comfortable with the subjectivity of the asset assessment using a *V* score, for example: "I'm slightly more comfortable with the (asset) significance ratings now. I liked the logic" (NSW 1). Training notes from a session with the VIC 1 group 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 addresses a lot of the questions and concerns that people have about the process.

4.3 Reluctance and inability to change existing institutional systems and processes
It was initially hoped that the use of INFFER by CMOs over time would result in higher scores for the standard benchmarking questions. However, it is evident from the high initial benchmark scores (Tables 1 to 4) that, before INFFER training, staff of CMOs are over-confident about their own processes. In a sense, a reduction in question scores over time may reflect progress, in that people have a more realistic understanding of the quality of their decision processes. Trainers have noted that before the training sessions people are optimistic about their CMO's investment process, but are often less so after training.

Not surprisingly, there is often resistance to the idea that change is warranted. For example: "Lots of work using INFFER versus less work with current ad hoc gut feel process may get same result from investors" (VIC 3). In the current investment context this comment is likely to be an accurate interpretation of reality. This perspective is also common at a state departmental level, for example: "There is a wide opinion among CMO 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).

Furthermore, many evaluation responses indicate concern that their organisation will be capable of implementing INFFER, for example: "Staffing- how do we fit this in! Resourcing!!!" (QLD 1). This is consistent with previous research which has shown that many CMOs are under-resourced, have limited expertise, and may lack capacity to implement a tool such as INFFER (Robins and Dovers 2007b, Seymour et al. 2008). The use of INFFER will ultimately need to show CMOs that clear advantages are obtained by adopting the Framework otherwise disadoption will occur. In the short-to-medium term there will need to be evidence of better funding success for projects developed using INFFER. In the long run, there is a need for documentation of better environmental outcomes being achieved with the use of INFFER.

4.4 A proactive role by Government will be needed
Responses to the evaluation questions indicate that CMO staff consider that various funder requirements, or lack of requirements by funders, are a major impediment to using INFFER. For example:

- "Different funding bodies have different application methods therefore (using INFFER means) more work for an unknown return" (VIC 1);
- "(We are) swamped by funder preferences and prescriptive criteria for eligibility under emerging funder mechanisms" (NSW 3);
- "Priorities for investment from our perspective may not align with priorities of other organisations not using a similar process. This combined with no feedback

process in application/funding process will lead to project failures and therefore failure in providing regionally significant environmental outcomes. (QLD 1)

- Just the number of projects we'd apply this to (100s) and do our investors require this level of justification? They haven't in the past. (VIC 3)

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. This is clearly evident in Western Australia, where organisations that have trialled INFFER say openly that they are waiting for decisions on what processes will be required by authorities for State NRM funding before deciding whether they will use it. State and Federal Governments could assist by demanding more rigorous approaches are used for developing NRM projects. Based on the poor outcomes from previous publically-funded environmental investment (e.g. Auditor General 2004, 2008; Pannell and Roberts 2010) it might be expected that government would want more transparency, rigour and accountability for public funding for environmental outcomes.

5. Conclusions

Eight CMOs throughout Australia are engaging with the use of INFFER to prioritise investment and develop projects to achieve environmental outcomes. 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; funding can be affected by many factors other than the quality of the project bid, and; there can be a lack of incentives to pursue more rigorous processes. The effort required to continually deal with the same issues and concerns absorbs considerable resources but is essential. It is hoped that the new training material and formal process will assist with understanding and skills, and initial indications are that this is the case.

Institutional support will be pivotal in influencing the uptake of INFFER and other more rigorous and robust approaches to environmental investment. Without this, changing the direction of environmental investment will be difficult. Barriers include reluctance to change existing processes at CMO and state/federal levels, lack of resources to change, and entrenched ideas about the use of environmental funds for community involvement and non-targeted investment. It is inevitable and even appropriate that CMOs will want to continue to fund some degree of broad capacity building in their regions, which makes it even more important that other funds are carefully targeted towards protecting spatially-defined environmental assets where clear environmental outcomes can be achieved.

6. Acknowledgments

7. References

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