

Irrigation Futures

of the Goulburn Broken Catchment



Final Report 8 – Project evaluations

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Documents in this series.

Final Report – Summary

Provides a brief introduction to the project and how the project objectives have been met.

Final Report 1 – Scenarios of the Future: Irrigation in the Goulburn Broken Region

Provides an overview of the region, drivers for change, scenarios, implications and strategies.

Final Report 2 – Regional scenario planning in practice: Irrigation futures of the Goulburn Broken Region

Provides a manual of project methodology for next-users.

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Irrigation Futures of the Goulburn Broken Catchment

Final Report 8 – Project evaluations

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Introduction

Irrigation Futures of the Goulburn Broken Catchment

The Goulburn Broken Catchment is known as the food bowl of Australia. It covers 2.4 million hectares and has a population of around 200,000 people (Department of Sustainability and Environment, 2005). Irrigated agriculture is a major business engine in the Goulburn Broken region, producing more than \$1.2 billion at the farm gate in 2001-2002 from about 280,000 hectares of irrigated agricultural land. Investment in on-farm and processing infrastructure is about A\$100 million per annum (Michael Young & Associates, 2001). The region is therefore a major contributor to the state and national economies and the quality of life of consumers.

The region faces significant challenges and opportunities. Issues such as free trade agreements, climate change, water reform, and technological developments will have a significant influence on the future. As one of the oldest gravity irrigation systems in Australia, Goulburn-Murray Water's irrigation system needs substantial renewal of its ageing infrastructure in the next 20 years. The consequences of these pressures for the region are highly uncertain and will include impacts on the region's economy, environmental assets and social fabric. Therefore, it is critical that the region develops a sound plan to strategically position itself for irrigation in the future.

Regional planning is highly challenging. In addition to the complexity of issues and high level of uncertainty, a diverse range of stakeholders have interests in the planning process and its outcomes. Enabling all stakeholders access to the planning process is important to managing their expectations and developing plans that are robust and likely to be adopted.

The Goulburn Broken Irrigation Futures project was established to assist the regional community to plan for the future. It was a regional initiative, funded by the Goulburn Broken Catchment Management Authority, Goulburn-Murray Water, Victorian Department of Primary Industries, Victorian Department of Sustainability and Environment, and Land and Water Australia. The project adopted a scenario planning approach in collaboration with the region's stakeholders to:

- develop a shared vision for the future of irrigation in the Goulburn Broken catchment over the next 30 years;
- identify scenarios of major constraints and opportunities and of regional response options;
- understand the social, economic and environmental consequences of various scenarios; and
- facilitate key stakeholders to build consensus on preferred regional strategies for future irrigation.

Scenario planning is a relatively new approach to strategic planning developed and applied famously by the Royal Dutch Shell Company to anticipate and plan profitably for the oil shocks of the 1970s (O'Brien, 2000; van der Heijden, 1996). Scenario planning explicitly acknowledges ambiguity

and uncertainty in the strategic question by creating a set of scenarios that describe plausible, coherent pictures of alternative futures. These scenarios become a powerful tool for testing the robustness of strategies, as well as for generating new strategic options. Scenario planning also provides a useful means for organisational learning. While scenario planning has become widely used by private corporations and public organisations (O'Brien, 2000), there are few examples of its application for regional planning.

The Goulburn Broken Irrigation Futures project used scenario planning in conjunction with the regional community to explore and plan for the future of irrigation in the region. The project was undertaken in four stages. Following an initial stage that developed the project, community perspectives on the future for irrigation were captured by an extensive stakeholder-engagement program. The third stage involved developing detailed scenarios and examining their regional implications. The final stage involved examining the implications of the scenarios for specific issues, in collaboration with the region's agencies and organisations.

What this Attachment to the Final Report provides

This Attachment to the Final Report provides a compilation of all the post-implementation reviews carried out within the Irrigation Futures project. The reviews are intended to provide further guidance to next-users on what worked (or didn't work) at various Stages of the project and why. Next-users can use these insights to modify their plans as required.

The document includes a review of:

- Stakeholder satisfaction with the Irrigation Futures Forum process (Stage 2)

This was conducted at the end of Stage 2 and is effectively an indication of the level of stakeholder satisfaction with the Participation processes. Community capacity building is characterised by 2 elements: Growth in the understanding of the complexity of the issues by the individual, and strengthening of cross-sectoral networks in the community. The review also seeks to obtain feedback from participants into their perceived changes in those 2 areas.

- Technical Working Group satisfaction with the Stage 3 process

This was conducted at the end of Stage 3. It provides feedback on those areas of the Stage 3 process which worked well, and which didn't work well from TWG participants. It also seeks to provide an assessment of the change in their thinking and attitudes as a result of their involvement in the Stage process.

- A review of overall project processes

This was conducted at the end of Stage 4. It provides an assessment of how the project was conducted in the light of best international practice. It also provides suggestions for next-users on what may be done differently at various Stages of the project.

- A review of the project methodology document (Attachment 2 to the Final Report)

This was conducted at the end of Stage 4. It provides feedback on the clarity of Attachment 2 as a tool for next-users.

**Analysis of post workshop participant questionnaires for
stage 2 of the Project:**

**IRRIGATION FUTURES
OF
THE GOULBURN BROKEN REGION**

Stephen Kelly

Evaluation and Facilitation Specialists

December 6th, 2006

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Executive Summary

This report outlines the results of analysis of 58 evaluation questionnaires from participants in Stage 2 of the 'Irrigation Futures of the Goulburn Broken Catchment' project. At Stage 2, a series of four Irrigation Futures Forum workshops were held at six major centres throughout the region. The evaluation questionnaire was completed by participants at the end of their fourth and final workshop.

The Irrigation Futures workshops have resulted in a positive and quantifiable change in the participant's understanding of:

- the complexity involved in sustainable development, and
- their willingness to share this understanding.

The factors that contributed most strongly to this change were; understanding gained through listening to other participants, and confidence gained from involvement in the workshops.

There was an even greater positive change in the social networks between participants expressed through a better understanding of, and respect for the viewpoints of other participants.

The change in understanding of other participant's viewpoints was statistically larger than changes in other specific factors. Participants attributed this change to the opportunity to hear and see other participants presenting their viewpoints, and the positive environment for discussion that the workshops created. One participant's explanation of this was:

"I enjoy listening to the views of others and trying to understand their perspectives. People are most often reasonable if they do not feel threatened. The workshops avoided threatening situations"

The non - threatening environment provided in the workshops has resulted in substantial personal growth amongst workshop participants. The rich mix of backgrounds and experience amongst participants has also contributed to the personal growth.

1. Introduction

This report outlines the results of analysis of the evaluation questionnaires from participants in Stage 2 of the 'Irrigation Futures of the Goulburn Broken Catchment' project. This report has been prepared for the project team.

At Stage 2, a series of four Irrigation Futures Forum workshops were held at six major centres throughout the region. The participants recalled the major events and changes that had occurred in the last 30 years, and identified some of the external and internal drivers for these changes. They considered current strengths and weaknesses of the region. They also described what the region would look like in 30 years if it were "thriving".

The participants then constructed a total of 26 "external scenarios". These are stories of plausible contextual environments in the next 30 years. In response to these external scenarios, participants generated many ideas on regional options for the future.

The large amount of material from the Forums was consolidated and synthesised through the project Stakeholder Reference Committee. The final outputs from Stage 2 were a set of aspirations for the future of irrigated agriculture in the region, four external scenarios, a list of regional strengths and weaknesses, and a suite of regional strategies to guide future regional actions (Wang et al, 2005).

2. Data collection

The data for this analysis was collected at the end of the fourth and final Irrigation Futures Workshop at five of the six centres that hosted workshops. The questionnaire (see appendix one) contained three questions about changes in participants own knowledge as a result of the workshops and three questions about changes in participants attitudes to others opinions. Each question had a quantitative component, where participants rated their change on a continuous scale that measured both positive and negative change. There was also a qualitative component for each question, where each participant had the opportunity to write a few lines to explain why they had nominated each level of change.

From a population of 120 participants from six sites, a sample of 58 participants from 5 sites was obtained.

3 Analysis

3.1 Quantitative

Each participants score on the questionnaire was measured from the zero point in millimetres in order to make full use of the continuous scale. In most cases this was straight forward, however a range of styles were used to mark the questionnaires and in some cases a large circle was used to mark the scale on the questionnaire, in these cases the score was measured from the centre of the circle.

The means scores for variable were tested for significant difference at the 5% level of significance

3.2 Qualitative

The qualitative data was analysed thematically using a data display approach. This is where the responses for each question for each participant are displayed in an excel spreadsheet enabling the detection of emergent themes in the data.

4. Results

4.1 Quantitative Analysis

4.1.1. Factor Analysis – check numbering & table of contents

External validity

Principal Components analysis with Varimax rotation was used to determine if the scores from the sum of the 6 variables in the questionnaire could be combined to create constructed variables that provide greater statistical rigour.

The questionnaire was designed to measure two constructed variables. One being individual change, measured by the three variables (questions):

- change in understanding of economic issues,
- change in understanding of social issues, and
- change in understanding of environmental issues

The other being social change, measured by the combination of the variables:

- understanding other's viewpoints,
- respecting other's viewpoint, and
- willingness to stand up in a community forum.

The results show (see table 2) that there are indeed two constructed variables, however the make up of these constructed variables is:

- Constructed variable 1 (4 questions): change in economic, social and environmental understanding + willingness to stand up.
- Constructed variable 2 (2 questions) understanding and respecting other's opinions.

For the remainder of this report Constructed variable 1 will be referred to as the new variable "internal" and Constructed variable 2 as "social".

Table 1: Factor analysis results

Rotated Component Matrix^a

	Component	
	1	2
Economic	.618	
Social	.647	
Environment	.620	
Understand		.863
Respect		.770
Standup	.748	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Internal Validity

Chronbach's alpha was calculated for each factor to see how well the individual variables combined to explain the total variation in the two constructed variables. A score of between .7 and .8 is desirable.

The results were:

For the constructed variable "internal" Chronbach's Alpha is 0.568

For the constructed variable "Social" Chronbach's Alpha is 0.539

These scores are a little low however these two constructed variables are strong enough to be used in further exploratory analysis.

The constructed variable "internal" is an indicator of growth in participants' understanding of the complexity involved in achieving sustainability.

The constructed variable "social" is an indicator of growth in the networks between people who normally wouldn't relate to each other.

4.1.2. Differences between change variables

The mean score for each variable is significantly greater than zero. It can be concluded with confidence that there has been statistically significant positive change in each of the six variables for the participant group as a whole in stage two of the project.

From table 2 it can be seen that the mean scores for all the four "individual" variables are lower than the two "social" variables. Examining the averages of these constructed variables (table 3) demonstrates that the difference between "individual" and "social" is not statistically significant at the 95% level of confidence (although it is a close call).

The largest impact of the workshop series was in changing participants' understanding of other's viewpoint. Although the mean statistic for this variable is on face value much higher than the other five variables, on examination of the 95% confidence intervals it can be seen that the

difference in means is only statistically significant for two variables: change in understanding of environmental issues and change in understanding of social issues.

Table 2: Mean scores for each variable

			Statistic
Economic	Mean		23.49
	95% Confidence Interval for Mean	Lower Bound	17.99
		Upper Bound	28.99
Social	Mean		22.08
	95% Confidence Interval for Mean	Lower Bound	17.57
		Upper Bound	26.58
Environment	Mean		17.53
	95% Confidence Interval for Mean	Lower Bound	12.24
		Upper Bound	22.82
Understand	Mean		31.98
	95% Confidence Interval for Mean	Lower Bound	27.77
		Upper Bound	36.19
Respect	Mean		24.34
	95% Confidence Interval for Mean	Lower Bound	19.00
		Upper Bound	29.68
Standup	Mean		22.62
	95% Confidence Interval for Mean	Lower Bound	17.20
		Upper Bound	28.04

Table 3: Mean scores for the constructed variables

			Statistic
Individual average	Mean		21.4292
	95% Confidence Interval for Mean	Lower Bound	17.9576
		Upper Bound	24.9009
Others average	Mean		28.1604
	95% Confidence Interval for Mean	Lower Bound	24.1809
		Upper Bound	32.1398

4.2 Qualitative Analysis

Change in awareness of economic, social and environmental issues.

For participants who indicated that they experienced change the major reasons were:

1. Gaining understanding from listening to others. This was the strongest theme across all three variables.
2. A broadening of general knowledge. This was fairly common in responses about economic and social, but rare amongst comments on understanding of environmental issues.

3. Specific insights. Responses along this theme were fairly rare for economic and environmental, but quite a strong theme for social issues. An example of a comment for change in awareness of social issues was;

“Some of these areas I saw as a negative i.e. lifestyle properties, and know I see them as having a positive aspect as well”

The major themes amongst responses of participants who indicated little or no change for the first three questions on the questionnaire, regarding a better understanding of economic, social and environmental issues were:

1. They felt the issues were not discussed, or not discussed in enough detail to change understanding. This theme was more prevalent in the economic question.
2. They already had a good understanding of the issue. This was the most common explanation of no change being experienced as a result of the workshops. It was a strong theme for economic and environmental, but not as strong for social.

Likely to stand up in a community forum

Most of the participants who indicated little or no change stated that they already do participate and have their say.

There were two major themes amongst those who indicated change:

1. Greater knowledge, as exemplified by the comment “I have a better understanding of the whole picture”
2. Greater confidence, for example “More confident about my own views being based on good argument + views from a broad cross section” and “Because the thinking process has been engaged, and I realise I have the capacity to make a difference”.

There were some comments indicating that greater knowledge had led to improved confidence such as “Increased knowledge and understanding always helps with confidence”. Also one participant indicated that just being asked to contribute has made a difference to them, “information +

knowledge = confidence + self esteem. It was nice to be able to be asked to attend which was a boost to my self esteem”.

Understanding and respecting other’s point of view

The finding from the quantitative analysis was that the greatest level of change for the six questions in the questionnaire was to the question; to what extent do you have a **better understanding of their (other participants) viewpoint**, as a result of your being involved in the Workshop series?. The qualitative data mirrors this finding, with the large majority of comments reflecting change in understanding of other’s viewpoint through two main mechanisms,

- The first being the opportunity to hear and see others presenting their viewpoint

There were numerous comments indicating that it was hearing from others in person that led to understanding their viewpoint, some examples are “able to hear them tell it, & see their passion or commitment”, “Face to face contact better communication method than normal contact means” and “meeting people face to face adds a further dimension to political and other differences”

- The second was the positive environment for discussion the workshops created.

“Conversing in a non adversarial way helps to broaden my knowledge and understanding”

“I enjoy listening to the views of others and trying to understand their perspectives. People are most often reasonable if they do not feel threatened. The workshops avoided threatening situations”

Of course it was not so positive for all, some participants felt differently, for example.

“The meetings I attended I gained a view from others that they had a very local viewpoint”

“I haven't heard much to convince me to become more extremely green or industrial”

“I have become closer to the environmental issue, but am quickly losing patience with the notion of community consultation”

However the positive responses were much more common, and some exemplified major change in participant thinking such as;

“Sometimes it is good to find yourself actually having to confront and look at other people’s opinions when it all seemed black and white.”

“Perhaps my opinion in the past needed to be more flexible.”

The level of change detected in the quantitative analysis was not as large for the question: Without necessarily agreeing with them - to what extent do you have **more respect for their viewpoint and what they are trying to achieve**, as a result of your being involved in the Workshop series? In general comments in this question mirrored those of the previous questions although there were some participants who indicated that they now understood some of the other's viewpoints, they hadn't gained respect for these viewpoints. Comments along this theme were "feel they are not realistic" and "Respect their viewpoint. But (I) probably better understand complexities". One participant was rather annoyed at the aspect of "I found it difficult to determine the agendas behind some of the contributions-personal masquerading as communal".

5. Conclusion

The results of the quantitative component of the questionnaire indicate that as a result of their involvement in the Irrigation Futures Forums there was a statistically significant positive change in both:

- a) The participants understanding of the complexity involved in achieving sustainability (internal) and
- b) The networks between participants who wouldn't normally relate to one another (social).

The change in understanding the complexity involved in achieving sustainability was attributed to:

1. A greater understanding of economic, social and environmental issues through listening to others during workshops,
2. A general broadening of knowledge about economic and social issues.
3. Specific insights into social issues affecting the region.

Participants indicated that they are now more prepared to stand up in public and share their understanding due to a combination of having greater knowledge of issues and an increase in confidence gained from participating in the workshops.

There was also a significant positive impact on the networks between participants, which can largely be attributed to two factors. The first being the opportunity to hear and see others presenting their viewpoint, and the second was the positive environment for discussion the workshops created.

6. References

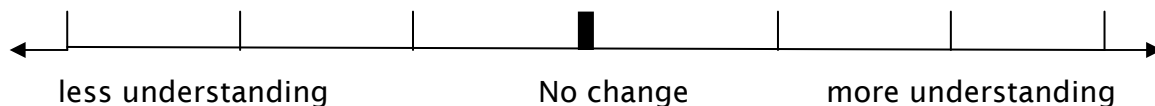
QJ Wang, Leon Soste, David Robertson, Selina Handley and Robert Chaffe (2005) *Developing Strategies for Irrigation Futures of the Goulburn Broken Region, ANCID 2005*.

Appendix 1

What impact has the Workshop series had on you personally?

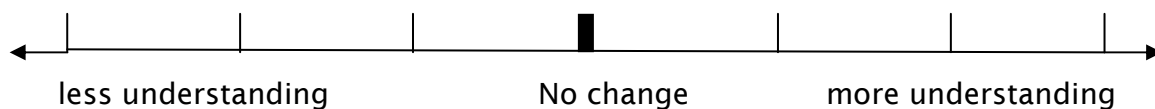
Thinking back from before the Workshops to now - To what extent do you have a better understanding of:

- the **economic issues** (water prices, market prices and global competition, changes in consumer expectations, FTA restrictions etc) associated with irrigation, as a result of being involved in these Workshops?



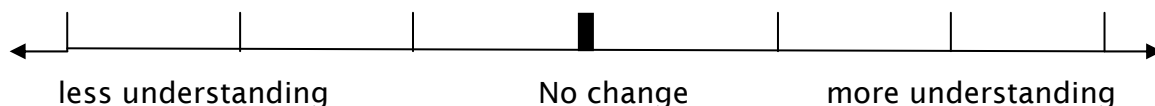
Tell me why...

- the **social issues** (the importance of creating jobs in regional communities, expansion of lifestyle properties, urban perceptions and the devaluing of agriculture, the rise of green politics etc) associated with irrigation, as a result of being involved in these Workshops?



Tell me why...

- the **environmental issues** (more water for the environment, managing finite surface and groundwater resources, land degradation, impacts of climate variability and change etc), associated with irrigation, as a result of being involved in these Workshops?

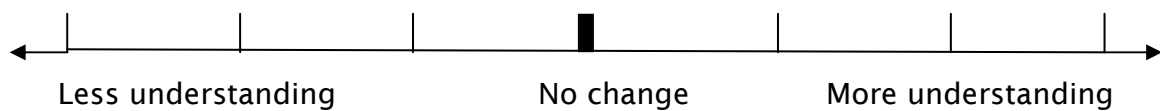


Tell me why...

What impact will your involvement in the Workshop series have within your community?

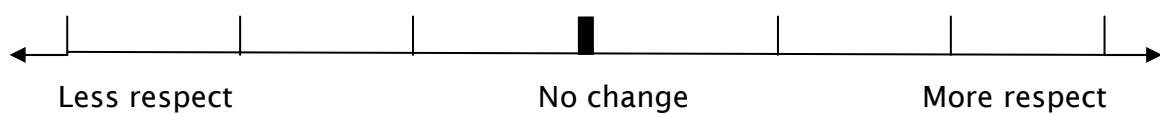
Thinking particularly of someone within the Workshop group who has a different view of the world to you - eg you are a farmer, and you have met someone with an environmental focus, or vice-versa etc

- to what extent do you have a **better understanding of their viewpoint**, as a result of your being involved in the Workshop series?



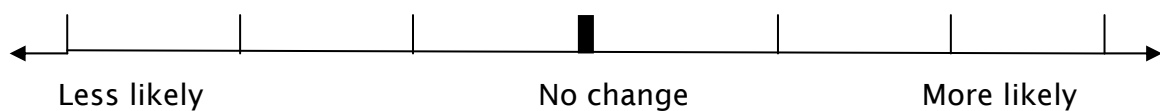
Tell me why....

- Without necessarily agreeing with them - to what extent do you have **more respect for their viewpoint and what they are trying to achieve**, as a result of your being involved in the Workshop series?



Tell me why....

- To what extent are you **more likely to stand up** in a community meeting and say your piece, or write a letter, or get involved in a working group, as a result of your being involved in the Workshop series?



Tell me why....

**Evaluation of the Technical Working Group Stage (3) of
the Project:**

**IRRIGATION FUTURES OF
THE GOULBURN BROKEN CATCHMENT**

Stephen Kelly

Evaluation and Facilitation Specialists

December 6, 2006

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Executive Summary

This report outlines an evaluation of Stage 3 of the 'Irrigation Futures of the Goulburn Broken Catchment' project. This report has been prepared for the project team.

This report is a synthesis of data obtained through an open ended questionnaire that was completed by 13 members of the Technical Working Group (TWG) after the completion of the final workshop, follow up phone interviews with nine members of the TWG and observations of the operation of the TWG.

Many of the TWG participants experienced profound personal change in relation to the way they view and respond to irrigation issues in their region, or in their personal confidence. There were particular aspects of the TWG process that were attributed to this change, including the invited speakers day, however the biggest single contributor seems to have been the environment conducive to open and honest discussion that was created by the engagement approach utilised by the project team.

Comments from participants such as *"It was a relaxed environment, more like having a cup of tea – as opposed to a normal meeting"*, and *"we learnt to debate without attacking"* reinforce this conclusion.

Areas of change that were reported by TWG members include:

- A broadening of thinking about future possibilities for the region.
- A more realistic understanding of the potential for growth of industries in the region, based on an understanding of regional, national and international competition.
- A willingness to speak up in public forums

There was a minority of respondents who felt that there had been no change in the way they think about issues. There were also a few who had experienced change over the last 18 months, but felt the change had come from other activities they had undertaken.

The majority of respondents were able to identify a change in the way they think about issues that they could attribute to their involvement in the TWG. The change was quite different for each individual, however a change in strategic thinking due to having a better understanding of the industries in the region - gained from the interaction with other members of the TWG was common to a number of respondents. Examples of these individual changes are presented in section 4.3.

The TWG members expressed a keenness for the outputs of the process to be used by other industry groups and authorities in the catchment. Some members expressed this as a hope that it will be used; others expressed it as a concern of a lost opportunity if it is not used. There was a strong feeling that the region will benefit if this work is adopted by a wider audience.

1. Introduction

This report outlines an evaluation of Stage 3 of the ‘Irrigation Futures of the Goulburn Broken Catchment’ project. This report has been prepared for the project team.

The final outputs from Stage 2 were a set of aspirations for the future of irrigated agriculture in the region, four external scenarios, a list of regional strengths and weaknesses, and a suite of regional strategies to guide future regional actions.

Stage 3 of the project has recently been completed. The focus of Stage 3 was to further develop and assess regional strategies and future action options. This is being done through constructing “response scenarios”. These are stories of regional players’ responses to the four external scenarios that were developed during Stage 2 of the project ([Wang et al, 2005](#)).

A stakeholder Technical Working Group (TWG) was formed to work with the project team to complete this task. The Group has two teams, Intuitive Team and Analytical Team, working in sequence to construct the response scenarios. The TWG was comprised of a selection of volunteers from the Irrigation Futures Forum workshops.

2. *Data collection*

At the completion of the Technical Working Group’s final workshop a qualitative questionnaire was distributed to all members of the group. Some members chose to complete the questionnaire immediately, and returned it at the close of the session. Other members took the opportunity to take the questionnaire home with them and fill it in at their leisure and return it in the replied paid envelope. The TWG members who were not present at the final workshop were sent the questionnaire via email; however the return rate from this cohort was very low. The results discussed in this report represent the opinions of twelve of the TWG members who were present at the final meeting, and one who was not.

After the questionnaires were returned, I contacted selected respondents by phone to explore their personal changes that were recorded in question five of the questionnaire (see appendix 1). Nine respondents were contacted by phone and were engaged in semi structured interviews that lasted 15 to 45 minutes. These phone interviews provided the data for the change stories in section 4.3.

The observations reported in section 4.2 were recorded while I participated in the final two workshops of the TWG, and attended the celebratory dinner after the final workshop. These observations were synthesised with the questionnaire responses and phone interviews to develop the findings reported in section 4.3.

3. Results

3.1 Participant Experiences

The TWG met on 18 occasions between May 05 & June 06. These were usually full-day workshops i.e. 10am – 3pm. Members could attend up to 12 of those meetings. The average attendance was 8 out of 12 meetings for all 23 members. Of those 23, only 3 attended less than half the meetings due to other work commitments. This high level of retention over such a long period is a strong indicator that the participants had been successfully engaged in the project. This engagement was sustained for over 12 months, and participants were very keen to see the process through to its completion. The following responses to the questionnaire provide an explanation of the factors that led to this high level of engagement from the participant's perspective.

Question 1. Highlights

The opening question asked participants about the major highlights of their involvement on the TWG. The majority of participants mentioned the **interaction with other members of the TWG** as a major highlight. Participants noted that the TWG gave them the opportunity to share perceptions with a diverse group. The experience was enhanced by the willingness of participants to share views and experiences. Some examples of comments along this theme were:

“The interaction between the participants, i.e. the bouncing of ideas (brainstorming) that took place to further develop concepts”

“Good interaction with a wide profile of experiences and backgrounds of all the participants”

The Invited Speakers Day – Professor Jonathan West & Dr Peter Ellyard was a noted highlight for a number of participants. One comment that captures the sentiment of participants was;

“Guest speakers a real highlight”

There were a number of comments around a theme of; being able to work in a group looking at the future. Participants seemed to really appreciate the opportunity to take time out of their busy schedules to sit down with other people from their region and think about the future of the region. Some comments that express this were:

“Giving time to thinking, especially about the future”

“Working together to develop a view of the future.”

One participant found learning about other industries in the region to be a highlight, and Rob Chaffe's Facilitation role was a noted highlight for another participant. Another highlight was QJ being invited to talk about the Irrigation Futures process by other organizations.

There was one response that was difficult to interpret. This respondent had written “*starting and finishing*” as their highlight. On further examination of comments throughout the questionnaire it became clear that this respondent was strongly focused on outputs and had not found the experience of developing the scenario responses rewarding. This is in direct contrast to most other respondents.

There was a sense of achievement amongst participants, exemplified by “*and finally the project coming together*” as a highlight.

There was an overall sentiment that the project team had managed to provide a safe and stimulating space for TWG members work in a co operative, manner. Some comments from participants that support this assessment are:

“Being able to contribute in a modest and worthwhile way.”

“The willingness of members to express their views and experiences”

Question 2. Frustrations

Question 2 invited participants to express themselves regarding any aspects of being a TWG member that they found frustrating or confusing. There was a wide range of responses to this question and it was very difficult to pin point one or two major sources of frustration, or even to generalise the groups’ experience.

A number of participants indicated that they **didn’t find the TWG process frustrating or confusing at all**. This sentiment is best wrapped up by the following comment; “*Nil - I have found the whole process rewarding at a personal level.*”

The most common source of frustration that was mentioned was **running out of time**, for example; “*Time was always an issue and we sometimes never explored some of the thoughts in any detail*”. An interesting interpretation on this point offered one participant during a follow up phone call was “*we often felt we had been cut off. However, I think this was because we were so involved in the discussions that time flew by*”.

Another aspect of TWG involvement that was mentioned as causing frustration was **Repetition**, as described by this participants comment “*Sometimes seemed we were without direction as to where we were going. - Often felt we were repeating ourselves too often.*”

Following on from this, there were times when some participants felt things were moving **Slowly**. There were however divergent views about the impact of the pace ranging from “*Sometimes seemed (there) was lack of real progress and things moving too slowly*” to “*nothing frustrating in the process, it was a little slow at times – but I was not worried by this.*”

There was a divergence of views amongst participants about the value of splitting the working group into the **Narrative and Analytical** sub groups. When I investigated this theme through the phone interviews I found that there were a number of TWG members that felt the split into to teams

worked quite well. Some thoughts were along the line of *“The two groups allowed for a broader scope of output and outcomes that may not have surfaced came to the front”*. There were two participants who noted the splitting of the TWG into Narrative and Analytical sub groups as a source of frustration. *“Some of the to-ing and fro-ing between the analytical and narrative groups didn't work well. It was distracting and confusing & wasted some positive energy.”* And *“I believe the Analytical team used best guess info to accept or reject the Narrative team's projections instead of better research that could have been drawn from global experiences”*. It is possible that this frustration was largely due simply to the physical separation of the two groups. One of the members of the narrative group made the comment *“we were not in the same space, so did not hear the rationale and discussion that led to the responses”*.

Some participants found it difficult to be part of an evolving process and at times felt **unsure of direction and not understanding the process**.

There were some aspects that received one-off mentions, such as too much **Focus on process rather than actions** and a perception that some ideas were lost when there was a **loss of meaning in the written word**. Another one-off mention was that the participants tended to **blend the scenarios** during the analysis, and this led to confusion.

A general assessment of the tone of frustration amongst the participants ranged from: not frustrated at all, **to** frustrated at times but understanding that the process was evolving, **to** definitely frustrated by some aspects of the TWG process. The majority of the respondents were in the middle group.

Question 3. Advice for the Project Team.

Some advice was for the project team to provide **more of the same** approach. An example of this was; *“The project team has been flexible and adaptable. Guest speakers provide insights that the group may not possess”*.

Participants felt that the project team had worked hard to get a broad group and the TWG was an excellent group, with one member illustrating this with the comment *“I couldn't have picked a better group myself”*. One respondent added the proviso that it would be good to have wider representation, but only if people with relevant experience were available, i.e. don't just recruit to fill demographic quotas. The demographics suggested for consideration were; industry leaders, educators, young people, women and people not connected to irrigation.

There were some comments around a theme of **more focus and precision**. The suggestions were; bring in an external scenario planning expert to help start the process, and focus more on outcomes and less on process.

There were some interesting one-off suggestions from respondents, including:

- Run the process as a single 3 -4 day workshop, rather than a series of small workshops,
- Outline the process at start (if possible),
- Don't split the TWG into narrative and analytical groups.

Question 4. Outputs Representative of TWG inputs?

All the respondents felt the project team had made considerable efforts to ensure that the project outputs captured the TWG's inputs. However, there was some divergence of view about whether it was actually achieved, or even possible.

The most common view was that representation of TWG inputs had been achieved, with comments along the line of:

"100%"

"I believe that the information has been very representative"

There were some who felt a terrific job had been done difficult task,

"not sure - however I am sure the project team has in good faith tried to reproduce views of the TWG"

"Difficult job but I believe the material accurately represented what the majority views were."

and two who felt it was an impossible task.

"It would be near impossible to include opinions and thoughts of all TWG members b/c of various personalities."

"Hard to do considering the diversity & background of participants."

Question 5. Change the way you think about issues in your region

There were a minority of respondents who felt that there had been no change in the way they think about issues. There were also a few who had experienced change over the last 18 months, but felt the change had come from other activities they had undertaken.

The majority of respondents were able to identify a change in the way they think about issues that they could attribute to their involvement in the TWG. The change was quite different for each individual, however a change in strategic thinking due to having a better understanding of the industries in the region - gained from the interaction with other members of the TWG was common to a number of respondents. Some comments are captured below:

"This has been a time of great change so hard to filter out what is due to project, and what other influences. Currently there is a general view that the region will have substantially reduced water for production. Project shows that this is not necessarily the case and if it is the case - it's not the end of the world."

"(I'm) more aware of the state of other industries beyond my own."

"I have been involved in these types of issues for many years but I thought I got a better understanding of the social issues and the need for education".

"Better understanding of other individual's perspectives & the issues specific industries are grappling with."

The changes individuals have experienced are further explored in section 3.3.

Question 6. Do you have any other comments about your involvement on the TWG?

Most of the respondents were focusing on their involvement in the TWG in their responses and described their experience with terms like *interesting, enjoyable and rewarding*. These participants seemed to value the benefits of being part of a group taking time out to look at the future very highly. A comment that captures the essence of this feeling is *"I'm not sure if we have stretched the scenarios far enough. But how we react to the scenarios is more important"*.

There was a lot of respect for the project team amongst TWG members, and each was congratulated for their efforts at least once. A comment that captures this was; *"I do appreciate the efforts of the team - they came across well prepared for each session & kept to time. Well done!!"*

As with any group of people there was a range of reactions to the experience of being a TWG member. There were a couple of people who were strongly focused on outputs and outcomes, and there was a sense of frustration with the evolving nature of the TWG process evident in their responses to all questions. This is perhaps best captured by their closing comments of: *"Positive result but could have been achieved in much less time" and "Need to focus more on outcomes rather than process"*.

The TWG members are very anxious to see that project is adopted by regional bodies for their strategic planning. This was expressed through excitement and relief that the CMA and local water authority were interested in using the approach.

There was also hope that other bodies would use the approach, which was expressed through a hope that the project team would be able to capture the interest of other bodies. There was some concern that the TWG outputs would be too intangible for them to be successfully marketed to other organizations. *"Considerable advancement in the project team learning curve, difficulty is to translate this to the broader community."*

3.2 Evaluator Observations

My observations from taking part in the last two TWG sessions and the celebratory dinner are outlined in this section. When I first walked into a TWG session I was presented with a group that was relaxed and engaged. This is quite a positive reflection on a process that was spread over 13 months.

1. The project team has engaged and maintained the interest of a group of people from diverse backgrounds, in an intensive process over a 13 month period.

2. During TWG sessions the participants talked quite openly about their own points of view, even though there was lot of divergence in viewpoints across the group. It is a positive reflection on the process that people can discuss divergent viewpoints in a non-adversarial environment. This interpretation was re enforced when I spoke to the TWG participants and heard comments like *"It was a relaxed environment, more like having a cup of tea – as opposed to a normal meeting"*, and *"we learnt to debate without attacking"*.

3. It was evident that the project team had demonstrated a willingness to take on board feedback and adjust processes throughout the project. The TWG members respected the project team for this approach. An example of this respect was the following comment from a TWG member; *"(I was) impressed with the guys and I saw that they were very sincere. This is why I stayed – I did not want to let them down."*

4. The TWG participants felt that they were valued by the project team. One TWG member said that this was the first time he had been part of a committee where the efforts of the members had been so openly acknowledged by its steering body.

3.3 Stories of change

Through the answers to question 5 on the questionnaire, and the follow up phone calls I was able to collect a number of stories about personal change. Most participants felt that they now thought differently as a result of being involved in the TWG. I have included a selection of four stories for this section. The four have been selected to indicate the breadth of TWG influence that participants have experienced.

These change stories are a synthesis of comments from the questionnaire and the phone interview from each of the four participants.

Story 1. My ideas aren't silly after all.

I think that I've been very fortunate to be invited to TWG. The Professor's Day was the turning point for me. Before the professors day there were some issues I could see, and I wondered if it "was just me (who thought that way), or are they real issues". I heard them (the professors) say some things which I agreed with but privately thought may have been outrageous. The professors said what they thought, and spoke honestly. After their talk I thought "gee I don't feel so bad now". Now I am happy to tell the truth, I see it needs to be said.

The professor's talk gave me confidence and realisation that things that I know and believe in should be stated.

I've (also) become more aware that change is inevitable, is coming extremely quickly and is necessary for survival & progress. It's come from listening to all the various points of view & reasons - I've learnt to value all these more!

I think this work is so important it should be seen in schools! It is really good to see that this work is acknowledged already.

Why is this story significant? – This story is about someone growing in confidence that was not gained from hearing new information, but from hearing their ideas echoed by a respected source. This person has probably always had a lot to offer in forums, but until this experience was unwilling to offer.

Story 2. You can grow food on concrete

I found that the workshop stage (i.e. stage 2) of the project had not extended my thinking very far, however through the TWG I have started to think a bit broader, the sky is the limit, and change will occur quicker than I had previously expected.

My involvement in the TWG has encouraged me to think outside the square more often. An example of how this has occurred is; I had always felt that we should preserve our most productive prime soil types. When I made that point at a TWG workshop, I was challenged by another TWG member. They made the point that water is the limit to production – not soil, and used hydroponics as an example of their point. How important is it that we preserve our productive prime soil types - when we can grow produce on the concrete car park?

Why is this story significant? Through the non adversarial atmosphere created in the TWG, long held beliefs could be challenged without attacking and defensive behaviour. This is an example of how participants were able to reflect on long held views in a safe environment. I think this participant still feels prime soils are important, but is now much more open to possibilities.

Story 3. Now I'm Pessimistic

Through the TWG I have developed an increased knowledge of the global situation and Australian agricultural competitiveness. The talk by Jonathan West was brilliant – engaging and full of new information. Q.J. fed in interesting information about the current situation in China. This new information has led me to question the optimistic view I had about our regions global competitiveness – especially in horticulture.

My views and assumptions changed during the TWG process, it was an evolutionary process.

I am now much more informed, questioning and pessimistic. This is a positive thing, as my previous optimism wasn't based on full information. This has changed the way I respond to issues. I no longer assume that the past is a good indicator of the future for agriculture and irrigation.

Why is this story significant? This participant can now contribute to regional strategies with a much broader knowledge of the current situation and future possibilities

Story 4. I know more about other industries

I had a lot of knowledge about my industry, but very little knowledge of other industries. The TWG gave me the opportunity to talk to very switched on people from other industries, for example; horticulture. I was unaware of the impact issues such as global warming, stiff international competition and a lack of profitability were having on the horticulture industries. Everybody I normally speak to says horticulture is the place for water, but (now I know) the people from horticulture don't say this!

The TWG experience hasn't changed my whole outlook, but it has sharpened my focus. I am now more cautious about a lot of areas.

Why is this story significant? Similarly to story 3 this participant can now contribute to regional strategies with a much broader knowledge of the current situation. The difference to story 3 is that this change appears to have come more from interaction with other TWG members than the influence of guest speakers.

4. Conclusion

Many of the TWG participants experienced profound personal change in relation to the way they view and respond to irrigation issues in their region, or in their personal confidence. Their were particular aspects of the TWG process that were attributed to this change, including the invited speakers day, however the biggest single contributor seems to have been the environment conducive to open and honest discussion that was created by the engagement approach utilised by the project team

The scenario planning journey that the project team lead the TWG through was an evolutionary process, which most members enjoyed thoroughly and found very stimulating. There were some TWG members who found it intangible and frustrating.

The TWG members expressed a keenness for the outputs of the process to be used by other industry groups and authorities in the catchment. Some members expressed this as a hope that it will be used; others expressed it as a concern of a lost opportunity if it is not used. There was a strong feeling that the region will benefit if this work is adopted by a wider audience.

5. References

QJ Wang, Leon Soste, David Robertson, Selina Handley and Robert Chaffe (2005) *Developing Strategies for Irrigation Futures of the Goulburn Broken Region, ANCID 2005.*

Appendix 1

Irrigation Futures Stage 3 Evaluation

Please take a few minutes to respond to these questions. All your responses will be analysed in confidence by Stephen Kelly. A synthesised report will be submitted to the “Project Team” as a component of the evaluation of the Irrigation Futures project.

1. What have been the major highlights for you during your involvement with the Technical Working Group (TWG) over the last 12 months?

2. Can you tell me about any aspects of your involvement in the TWG over the last 12 months that you found frustrating or confusing?

- 2. a)What was it that made this frustrating or confusing?

- 3. What advice would you give to the “Project Team” if they had the opportunity to run this process again?

- 4. To what extent do you believe the material produced by the TWG reflect the opinions and thoughts of all TWG members?

- 5. During the time you have been involved in the Technical Working Group do you feel there has been a change in the way you think about issues in your region?

Please circle

Yes / no / not sure

5.a) Please describe this change to me.

5.b) What has specifically led to this change in the way you think about issues in your region?

Do you have any other comments about your involvement on the TWG?

Are you happy for me to talk with you on the phone about your experiences?

Please circle Yes / no

If yes: I will be available on Friday, June 16: 10.30 am 1 pm 7.30 pm

Or another day & time -----

Name:

Phone number:



Australian Centre for Innovation

Evaluation and Diffusion of *Irrigation Futures*

**A Study of the Processes Used in the Irrigation
Futures of the Goulburn Broken Catchment Project
and Recommendations for the Effective Diffusion of
its Findings and Lessons**

for
**Primary Industries Research Victoria, Tatura
Department of Primary Industries**

by
**Professor Ron Johnston
Executive Director
Australian Centre for Innovation**

May 2007

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1. Executive Summary

This report provides an independent review of the Irrigation Futures project. The evaluation is conducted against the criteria of quality of conjectures, quality of processes, impact through learning effects, and impact on strategy. It also provides direct links to some broadly comparable foresight projects conducted in Europe.

The Irrigation Futures project is an exemplar of a very thoroughly planned and conducted foresight project. It sought to achieve its objectives primarily through the indirect mechanism of stakeholder engagement, in which it was very successful. But it has also produced detailed quantitative implications of the scenarios which were developed, which are being used by both organisations with broad responsibilities and individual producers, in their planning for the future. A further feature is the extent to which implementation is proceeding through the existing mechanisms of the authorities responsible for water supply and infrastructure,. And land use planning.

The processes used in the Irrigation Futures project have many notable characteristics. Some are essentially unique, reflecting the particular circumstances of this project. These, together with other more general aspects, are on a par with best international practice.

The special features include:

- a 'slow' foresight process
- deep embedding in existing decision-making structures
- relying largely on local/regional expertise
- a regional economic development focus
- local and regional planning authorities as the major clients
- a developmental approach based on adaptive management
- a clear distinction between internal and external drivers
- a process which prepared for consideration of possible futures by an examination of the past, and engaged the participants in identifying community aspirations prior to considering possible futures
- avoidance of pre-determined scenario logics to define the key characteristics of the scenarios to be developed
- generation of a manageable number of scenarios by a separate process based on the interaction of a Narrative team and an Analytical team
- modelling of the quantitative consequences of each scenario
- a wide range of outputs tailored for different sectors of the stakeholder community
- explicit consideration of the implications of the scenarios for regional stakeholder organisations in their planning

The report identifies a number of options for continued diffusion of the processes, the results and the implications of this significant project.

2. Objectives of the Study

- i) To provide an independent review of the processes used in the Irrigation Futures project, with a particular emphasis on:
 - those components which were essential to the achievement of community ownership and subsequent implementation;
 - those areas where alternative or additional steps may have been taken;
 - those areas which have made a unique contribution.
- ii) To propose possible publishing outlets and the type of content (by way of outline structure) appropriate to each.

3. Methodology

The methodology of this review was based on:

- a detailed examination of all the documents prepared over the life of the project;
- a close examination of the independent surveys conducted of participants' experiences and opinions;
- interviews with key players and stakeholders of the project, including:
 - Dr QJ Wang, Project Leader
 - Mr Leon Soste, Operational Manager
 - Mr David Robertson, Systems Analyst
 - Mr Robert Chaffe, Workshop Facilitator
 - Mr John Pettigrew, Chair Governance Committee, Director Goulburn Broken Catchment Management Authority (GBMCA) and Goulburn Murray Water (GMW), orchardist
 - Mr Murray Chapman, Member Governance Committee and Coordinator National Program for Sustainable Irrigation, Land & Water Australia (LWA)
 - Mr Ian Moorhouse, Member Governance Committee and Manager Water Delivery Services, GMW
 - Mr Ken Sampson, Member Stakeholder Reference Committee and Executive Officer Shepparton Irrigation Region Implementation Committee, GBMCA
 - Mr Derek Poulton, Member Stakeholder Reference Committee and Manager Strategy and Systems, GMW
 - Mr Shane Hall, Member Technical Working Group and Director, MJ Hall & Sons (Orchardists)
 - Mr Bruce Anderson, Member Technical Working Group and Operations Manager, GVW

- Durham Prewett, Member Technical Working Group and Manager, Field Services, Fontera
 - Mr John Dainton, Member Technical Working Group and Chair, Northern Water Forum;
- careful comparison with relevant findings of the international literature, and experience with foresight projects; and
 - a review of all the available publishing outlets as to their suitability for further diffusion of the project findings and lessons.

The project has been documented in great detail. There is no attempt in this report to reproduce or summarise the many components of the project, other than as they arise in the detailed assessment of the processes involved.

4. Introduction to Foresight and Scenario Planning

Foresight is an ‘umbrella’ term used to describe a set of techniques increasingly used to support policy-makers in building long-term strategies through structured and focused interaction with experts and stakeholders. Future oriented thinking is regarded as vital for any forward planning or policy activity in order to be able to meet future challenges proactively. Foresight enhances such thinking by gathering anticipatory intelligence from a wide range of knowledge sources in a systematic way and linking it to decision making.

There are many definitions, the essence of which contains actions directed to addressing and acting upon the future. More formally, “foresight is a systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process aimed at present-day decisions and mobilising joint actions.”¹

As the European Commission’s FORLEARN Manual indicates, designing a Foresight exercise is far from straightforward. There is no single best way, as many requirements depend on the specific context, issues and needs. Every Foresight exercise is different and there is usually a lot of “learning by doing”. Even if an experienced practitioner is involved and may have a mental picture of the exercise at the outset it is likely to evolve in different directions as it progresses. There are also times where Foresight exercises are systematic and recurring activities, in which case it is easier to learn from experience.

Foresight design is necessarily an iterative process involving numerous feedback loops. For instance, the amount of resources needed depends on the objectives and the outcomes, but the objectives are often reviewed according to the resources available. Once the decision to proceed has been taken, a number of important decisions need to be made. These include issues such as the **focus**, **objectives**, **users**, **outcomes**, **scope**, **approach**, **time horizon**, and the expected **duration** of the exercise.

¹ <http://forlearn.jrc.es/index.htm>

There has been a very substantial growth in the application of foresight in the first decade of the twenty-first century. The European Foresight Monitoring Network (EFMN) which was established in 2004 as a repository of international foresight projects currently has details of 1408 distinct [foresight initiatives](#), covering almost every topic imaginable.

A few of these projects, which appear to be directly relevant to the Irrigation Futures project, are listed below:

- [Functional Foods. Position and future perspectives](#)  Target Country : Netherlands
- [Bioproduction and ecosystem development in saline conditions](#)  Target Country : Netherlands
- [Agriculture in society: a new perspective, future initiatives for knowledge and innovation](#)  Target Country : Netherlands
- [Agribusiness: knowledge and innovation priorities, aspirations for the 21st century](#)  Target Country : Netherlands

In addition, there has been developed a 'Blueprint for Regional Foresight' providing practical guidelines on the setting up, planning and implementing of foresight initiatives in regions with specific sets of characteristics. The five blueprints are:

- [FOR-RIS](#) is aimed at regions that have carried out or intend to carry out RIS-RITTS initiatives 
- [UPGRADE](#) aimed at regions whose regional production systems are in decline and that must now re-structure and upgrade to more knowledge intensive production 
- [TECHTRANS](#) aimed at regions that have achieved excellence in specific technology domains and is intended to help them integrate and harmonize their technology support mechanisms on a trans-regional basis across Europe 
- [TRANSVISION](#) aimed at the needs of neighbouring regions separated by national borders 
- [AGRIBLUE](#) focused on the sustainable development of rural economies 

Hence, there is now a considerable body of experience and impacts against which to assess the processes of the Irrigation Futures project. At the same time, the field of foresight is one that is far from maturity. It is still undergoing rapid development. For example, a standardised model or approach for evaluation of foresight projects is yet to emerge.

5. Highlights of the Processes of the Irrigation Futures Project

Before proceeding to a detailed evaluation of the processes used in the Irrigation Futures project, it is worthwhile to draw out some of the highlights that serve to illustrate the rather special and possibly unique characteristics of this foresight project.

- i) *The Irrigation Futures project applied **slow** foresight.* There has been a general tendency within foresight to attempt to speed up the process to make it more attractive to the fast pace of modern decision-making. The focus has been on increasing the productivity of foresight by reducing the process time from years and months to weeks and even days. However, the *IF* project had a life-time of 3½ years. This *slow* process allowed time for the steady building of stakeholder engagement and understanding, the development of productive strategic conversations between participants and the detailed working through of possible consequences. The risks were the maintaining of stakeholder, and client, interest and engagement over such a long period.
- ii) *The Irrigation Futures project was deeply **embedded** in existing decision-making structures.* With a strong focus on emerging technologies, there has been a tendency for foresight to be based on special processes outside existing decision-making processes, or because appropriate decision-making processes did not exist. The *IF* project nested the foresight largely within existing structures, notably via the governance structure. The Governance Committee which oversaw the project, and played an active role in accepting, rejecting or modifying proposed changes, was composed of the clients (ie funders) for the project. The Stakeholder Reference Committee was structured around the existing Shepparton Irrigation Region Implementation Committee (a sub-committee of the Goulburn-Broken Catchment Management Authority), with the addition of a few additional members with additional expertise.
- iii) *The Irrigation Futures project relied largely on **local/regional expertise**.* Because of the historical association of foresight with science and technology-driven change, projects are commonly based on national and international expertise. In contrast, the *IF* project relied almost entirely on the professional and practical expertise of those working in the region, be they agricultural researchers, irrigators, water managers or farmers. The key Technical Working Group, which was largely responsible for the development of a limited number of scenarios from the multiple story-lines developed through the Futures Forums, for characterising the interaction between the external driving forces, and for determining the regional consequences, broad implications and possible responses, was based on volunteers from participants in the six regional Futures Forums.

- iv) *The Irrigation Futures project had a **regional economic development focus**.* While this focus is by no means unique among foresight studies, there has been a partial tendency to adopt an 'OECD country' stance, with an emphasis on common or shared models of development and economic competitiveness. The *IF* project in contrast, but in alignment with a number of European and South American foresight projects, focussed very strongly on a regional and local perspective, while acknowledging the effects of drivers external to the region.
- v) *The Irrigation Futures project's major **clients were local and regional planning authorities**.* Where many foresight projects are directly or indirectly aimed at a client base of international corporations, national governments and supra-national institutions, the *IF* project was designed to serve agencies with responsibility for promoting relevant agricultural research, managing water supply and infrastructure, regional economic development, promoting sustainability and planning land use and associated services.
- vi) *The Irrigation Futures project adopted a **developmental approach based on adaptive management**.* Planning for the *IF* project was meticulous, with detailed plans developed and approved for the overall plan, stakeholder participation (externally peer reviewed), scenario assessment, communication, evaluation, and adoption. The project was managed against a series of pre-determined milestones. However, over the lifetime of this long project, and reflecting the mutual learning that was occurring between stakeholders and the project team, adaptive management was applied to progressively re-orient the project to meet newly emerging concerns and insights. For example, initial planning included a scenario assessment stage, but feedback from participants made it clear that they placed far greater value on modelling the implications of the scenarios, rather than further developing them.
- vii) *The Irrigation Futures project made a clear **distinction between internal and external drivers**.* While this approach is not uncommon, the *IF* project devoted a considerable effort in their six series of Futures Forums to identifying driving forces in the short-to-medium term (2005-2020) and the longer term (2020-2035), to identifying them as water, or non-water related, and to classifying these drivers as internal, or within the control of the region, and external, or beyond the control of the region.
- viii) *The Irrigation Futures project **prepared for a consideration of possible futures by an examination of the past**.* The *IF* Futures Forums commenced with the construction of a 'history wall' on a 10 metre chart with a timeline of the past 30 years. Changes and significant events were mapped by participants. The picture of history produced was then considered through a reflective, interpretive and decisional framework. In this way, participants were alerted to the extent of change in the past, and the way it had been managed or adapted to.

- ix) *The Irrigation Futures project engaged the participants in **identifying community aspirations prior to considering possible futures**.* The device used was to engage Futures Forums participants in writing a letter to themselves from the future of 2035, describing what they were seeing, hearing, smelling and feeling.
- x) *The Irrigation Futures project **did not apply pre-determined scenario logics to define the key characteristics of the scenarios to be developed**.* It is a common practice in scenario planning to pre-determine axes, commonly economic and environmental or social, in order to shape the scenarios to be developed. The IF project engaged participants in the construction of a 'futures wall', based on the external drivers already identified, and allowing for optimistic, pessimistic and status quo outcomes from the operation of the drivers. The six regional Futures Forums generated 28 distinct storylines about the future of the region.
- xi) *The Irrigation Futures project **generated a manageable number of scenarios by a separate process based on the interaction of a Narrative team and an Analytical team**.* The role of the Narrative (or intuitive) team was to scope out the scenarios stories by examining the interplay of scenarios, responses and consequences. The role of the Analytical team was to critique the scenarios for logic, rationale, empirical basis and plausibility. In a way, the operation of these two teams can be considered as an organisational separation of the right-brain creative, and left-brain analysis which is a feature of all foresight projects. In this way, the 28 story-lines were reduced to five, and ultimately four, scenarios.
- xii) *The Irrigation Futures project **modelled the quantitative consequences of each scenario**.* Scenarios are commonly valued, among other factors, for their ability to address qualitative change. However it is frequently difficult to transform these qualitative insights into quantitative consequences to which planners and managers can more easily respond. The IF project developed projections of the future state of such key variables as land use, water use, irrigated area, and value of production (for each of the four major agricultural industries) and population under each scenario.
- xiii) *The Irrigation Futures project **produced a wide range of outputs tailored for different sectors of the stakeholder community**.* Most foresight projects only lead to a single report, with some possible associated communication activities. Too often, it is left for decision-makers to decide what is of value to them in the general report. The IF project produced a substantial number of different outputs targeted at different sectors of the stakeholder community, such as:
- a handbook of flexible technologies for irrigation infrastructure;
 - an R&D framework for adaptive management;
 - scenario implications for land-use planning;
 - a scenario book capturing all elements of the project and designed as a resource for future users;

- a scenario kit irrigators can use to assess the scenario implications for their farm layout, operation and business planning; and
 - feedback workshops to participants and other newly interested stakeholders.
- xiv) *The Irrigation Futures project facilitated the **explicit consideration of the implications of the scenarios for regional stakeholder organisations in their planning.*** This has involved:
- Goulburn-Murray Water (GMW) in planning for reconfiguration of the irrigation distribution system using a detailed Water Atlas of the region with working groups systematically examining scenario implications;
 - Goulburn Broken Catchment Management Authority (GBCMA) in developing its five-year plan for catchment management;
 - Local Government, in developing land-use planning, including regional economic development, zoning, service provision, environment management, and community development and requirements.

6. Detailed Assessment of the Processes of the Irrigation Futures Project

As mentioned earlier, formal processes for evaluation of foresight exercises are not highly developed, though there is considerable discussion in the literature. One of the more credible approaches is provided by Barre and Keenan² who argue:

“a fully fledged evaluation of foresight should be based upon an assessment of:

1. its quality in terms of the conjectures produced,
2. its quality in terms of the processes eg debates, inclusiveness, actor alignment, etc,
3. its impacts in terms of learning effects, and
4. its impacts in terms of strategy formulation for action by system actors.”

This scheme of evaluation will be applied, in this section, to the Irrigation Futures project. The specific requirements outlined in the first part of the objectives will be addressed within the second criterion.

² Barre, R., and Keenan, M., ‘Evaluation, Impact and Learning’, forthcoming in Cagnin, C, Barre, R., Johnston, R., Keenan, M., and Scapolo, F.(eds), *Future-Oriented Technology Analysis (FTA): Strategic Intelligence for an Innovative Economy*, Springer; available as a conference anchor paper to the International Seville Seminar on Future-Oriented Technology Analysis (FTA) at <http://forera.jrc.es/fta/intro.html>

6.1 Quality of Conjectures

Conjectures, in this usage, refer to the speculations and anticipations that are formulated about the future. One analyst³ has argued that evaluation of foresight has “paid little attention to the question of what kind of future is constructed, nor to the question of its validity or strategic value”. However, “the quality of conjectures about the future is of great importance, since participants will want to see the strategic value of their considerable efforts embodied in meaningful, tangible outputs.” The quality of these conjectures should be assessed in terms of “their creativity and the extent to which they transcend existing beliefs and innovation patterns”.

Firstly, in the eyes of the clients, participants, and stakeholders, there appears to be a uniform view that the scenarios are thorough, reliable, evidence-based, and feasible. Given the many opportunities to apply the scenarios to an extremely wide range of situations, this alone is clear evidence of their soundness.

To this, the author can add his findings that the scenarios are of a quality, consistency and detail in keeping with accepted international good practice.

One feature of the process of scenario development was the application of an essentially standard set of external drivers. Thus, the water-related drivers were restricted to four categories: government policy, climate, water trade, and ‘other’. The non-water related drivers, which were applied to each of the industry sectors, were cast much more widely, including varying trade conditions, genetic modification, cost of oil, environmental and safety concerns and global economic conditions.

One consequence may be that the four scenarios appear to have some levels of overlap. For example, all four scenarios accept that the Water Reform White Paper is progressively implemented, involving unbundling of water rights and making ‘sales’ water into an independent entitlement. Two of the scenarios foresee no change to water tariffs, while the other two see water tariffs increasing at the inflation rate. These may be perfectly sound estimations, but they do serve to ensure a degree of commonality across the scenarios in some aspects. It is generally considered that dissimilarity in scenarios is an aid to the consideration of implications under very different possible futures.

A second consequence may be reflected in the comments: “*the bad scenario wasn’t bad enough – it is all happening now!*”, and “*it would be useful to revise the scenarios in the light of experience this season*”. It is apparent that aspects of the conjectured possible futures have become reality in the life of the project. This does suggest that the scenarios may not have sufficiently *transcended existing beliefs and innovation patterns*.

³ van der Meulen, B., de Wilt, J., and Rutten, H., ‘Developing Futures for Agriculture in the Netherlands: a Systematic Evaluation of the Strategic Value of Foresight’, *Journal of Forecasting*, Vol 22, pp219-233, 2003

6.2 Quality of Processes

6.2.1 Those components which were essential

The Setting

The Goulburn-Broken region has some history of collective and collegial tackling of major threats, in particular in addressing the looming salinity problem. While the general cultural emphasis favoured incremental change, *“there has been some experience in the catchment of future thinking; so this was not the first time, just the first fully resourced project.”*

The clients, as represented by the members of the Governance Committee, appeared to accept that the project was a long-term exercise that would produce benefits mainly in terms of attitude changes about addressing the future and practical learning for participants, as reflected in the comments: *“I didn’t want them pushed for results too soon”,* and *“the journey is as important as the outcomes, and you cant shorten the journey”.*

Furthermore, the strong sense of community, based on a relatively stable moderate population and limited mobility, and ease of contact between members of the community, assisted in providing an underpinning glue that this was a worthwhile exercise about matters that were important to everyone, and hence *“the reason I kept attending the meetings, beyond what I was learning, was a sense of loyalty to the group – I couldn’t let them down”.*

The Structure

The Irrigation Futures project had a highly developed and formal structure. The four project stages were carefully planned against six project themes, with regular reporting against milestones. A clear project organisational structure was established, with respective responsibilities for oversighting and representation of client interests through the Governance Committee, linking with existing mechanisms and knowledge through the Stakeholder Reference Committee, developing the scenarios and their implications through the Futures Forums and the Technical Working Group, and a small, dedicated Project Team.

As a consequence, *“clearly defining the project organisation structure at the start allowed all participants to understand the project governance arrangements and relationship between the different groups”.*

This highly developed formal structure and reporting requirements may have raised risks of rigidity, a top-heavy direction and excessive bureaucratic requirements. However, these risks did not apparently eventuate because of the effectiveness of the risk management strategy applied, and the adoption of adaptive management throughout the project.

For each stage of the project, a risk management strategy was developed and presented to the Governance Committee for consideration and approval. Risks

were identified for strategic direction, inputs, outputs and outcomes, and appropriate management responses identified.

Typical risk issues identified were:

- key stakeholders fail to see the relevance of the project direction to their particular operation;
- loss of key team members;
- validity of outputs questioned by stakeholders;
- scenarios become outdated;
- agencies or enterprises do not act upon the information generated from the project; and
- implementation of some issues is beyond the capability of individual stakeholder groups.

Typical management responses were:

- the Project team is working with targeted end-user groups to identify scenario implications relevant to the organisation's mandate, and to develop organisationally specific strategies to those implications;
- there is some overlap of skills among team members, so adapt as required;
- new developments will be incorporated as required; the scenarios are not intended to be static;
- the adoption strategy should minimise the risk of non-adoption; if this does occur, the project team will develop ways to encourage agencies to implement project outputs; and
- the project team is engaging with regional groups to develop a regional approach to implementation of project outputs.

The most important risk issues that emerged during the review were:

- maintaining interest, and continuity of understanding and support, among clients over the long duration of the project;
- maintaining the involvement and enthusiasm of project participants, including the project management team, over the project;
- allowing for major changes in relevant framework conditions, and government policies, over the life of the project.

In the event, these issues did not produce major difficulties, or were managed effectively.

With regard to the adaptive management approach, plans were recast and fine-tuned at the end of each stage, on the basis of the experience of the Project Team and formal independent evaluations. The Governance Committee was able to play a strong role in shaping this adaptive process. In addition, The Technical working Group was made up of a very diverse group of people, all hand-picked as change agents, who would be able to contribute to continuing development of the scenarios and their implications. In addition, the clear structure *"provided participants with confidence that their contributions would be used and that their commitment to the project was manageable"*.

Stakeholder Engagement

It was recognised from the start that effective stakeholder engagement would be crucial to the success of the project. It was noted *“the growers could have been very hostile”*. Hence the importance of the process of stakeholder analysis to identify who the key stakeholders were and how best to involve them, the casting of the perspective of ‘stakeholder’ in a deliberately broad rather than a narrow fashion (eg potentially to include consumer, environmental and indigenous interests), the development of a stakeholder participation plan, and the formulation of five principles for stakeholder engagement.

In addition, the Futures Forums were organised in six disparate regional centres in order to facilitate the regular involvement of the widely spread community – Echuca, Kyabram, Shepparton and Cobram in the Shepparton irrigation area, Benalla (mid-catchment) and Seymour (upper catchment).⁴

It was well-accepted that *“the input from the end-user was crucial”*. Indeed, *“the engagement of stakeholders was so effective that some groups requested further meetings (beyond the four that occurred) to refine their stories”*.

For the Project team, the importance of achieving endorsement of key managers within stakeholder organisations early in the project was paramount. In addition, involvement of Departmental policy officers in Futures Forums and the Stakeholder Reference Committee provided a direct connection with government policy developments

The Processes

The perspective that the project team brought to the project is widely seen as an essential component. Thus it was noted that *“DPI Tatura had a good reputation for outreach”*, but also that *“it was very important that PIRVic/DPI did not come with an agenda”* and *“didn’t promise to influence the politicians”*. Rather, their commitment to a facilitative rather than an advocacy role, with responsibility to understand and faithfully represent stakeholder views, not champion a particular cause, as stated in the Principles for Stakeholder Engagement.

The processes of planning, stakeholder engagement, development of hindsight, insight and foresight (through the story-line constructions), the multiple Futures Forums in six locations, the synthesis of storylines into a limited number of scenarios were all essential to an effective project. The introduction of detailed scenario modelling led to *“projections which grabbed a lot of farmers’ interest”*. Substantial involvement of key stakeholders and clients is currently leading to direct examination of the implications of the scenarios, in various ways, to planning of reconfiguration of the irrigation distribution system, catchment management and land use planning.

There is also substantial evidence that the facilitators, the high level of professionalism they brought to the planning and conduct of the Futures

⁴ The distances of each of these centres from Shepparton are about 50-70 kms

Forums, and the creation of a non-threatening environment in these Forums were an essential component of the process. As the report of the evaluation of Stage 3 noted:

Many of the TWG participants experienced profound personal change in relation to the way they view and respond to irrigation issues in their region...the biggest single contributor seems to have been the environment conducive to open and honest discussion that was created by the engagement approach utilised by the project team.

"It was a relaxed environment, more like having a cup of tea, as opposed to a normal meeting", "the team created a special, 'artificial' environment marked by little conflict and openness to mutual learning", and "we learnt to debate without attacking".

Finally, mention must be made of the widely recognised outstanding qualities of the project leader and team members and the common, resounding response of participants: "I would do it all again without hesitation".

6.2.2 Those areas where alternative or additional steps may have been taken

The Irrigation Futures project is a comprehensive and multi-faceted exemplar of good practice in foresight. There are no substantive alternatives of a major kind to the package that was developed. Furthermore, given the integrated nature of the package of processes, possibly advantageous changes in one area may have had a negative effect elsewhere. It can only be evaluated in terms of an operating system, and in those terms it has proved markedly effective.

A number of minor critical comments, identified through the selective discussions that were held over two days, are listed below, in no particular order:

- Failure to maintain engagement with CRC for Irrigation Futures
- Challenge of engaging catchment areas outside the irrigated region
- Difficulties with timely engagement of local government, and managing competitive pressures between different councils
- *"Some dispute over whether the project should have taken the economic analysis further eg by getting external economists to perform more detailed economic modelling"*
- Changing membership from key Government Departments
- Commitment from the client organisations was not always at the very top level
- Managing change at the top level of client organisations
- Greater involvement of planning community
- *"Should they have thought about implementation earlier"*
- *"The bad scenario wasn't bad enough – it is all happening now!"*
- Difficulties for participants remote from Tatura to participate – should video-conferencing have been used?
- Challenge of reducing 28 story-lines to 4 scenarios – a lot of detail was lost

- *“There were a couple of flat spots during the project – needed new vision and energy”*
- *“The split between narrative and analytical teams didn’t work very well.; you couldn’t stay in the specified role; in practice they ended up working as two parallel groups”*
- *“The timeframe was too long; it would have been better with a 6 month start-up, 12 months project, 6 months implementation”*
- *“It was too Shepparton-centric”*
- *“A few people were lost after the first meetings – they didn’t last until things got interesting; they needed to make the vision powerful and the process engaging from the start”*
- *“If you missed one meeting, it wasn’t easy to catch up”*

These are individual opinions, and largely address minor components of the project that may, or equally may not, have been able to be addressed more effectively.

One area worth considering where alternative or additional steps may have been taken is in the area of implementation. As the project is not yet complete, this is still early days. Evaluation of the implementation of foresight projects is typically applied two to three years after the project is completed. There is also evidence of significant commitment to implementation, summarised in Section 6.4.

Nevertheless, there may be preliminary lessons to be tentatively drawn. It is recognised that Irrigation Futures was developed, funded and executed as a research project. Nevertheless, foresight projects by their very nature necessarily need to be framed and conducted in a context of application and implementation. Developing a process of leading key stakeholders into consideration of implementation in their own organisations and areas of responsibility earlier in the lifetime of the project may have been advantageous.

But, in the end, foresight is only one source of advice and information, not often with a privileged status, and forced to compete in a very crowded space of policy evidence, advice and influence.

There are also issues of communication and diffusion which will be examined in Section 7.

6.2.3 Those areas which have made a unique contribution

Fourteen highlights of process have been identified in Section 5 that illustrate the special and possibly unique characteristics of this foresight project.

6.3 Impacts in terms of Learning Effects

Extensive learning effects by participants, stakeholders, clients, facilitators and the project team have been reported.

Areas of change that were reported by Technical Working Group members⁵ include:

- a broadening of thinking about future possibilities for the region
- a more realistic understanding of the potential for growth of industries in the region, based on an understanding of regional, national and international competition
- a willingness to speak up at public forums.

Other learning effects identified in interviews included:

- *“evidence of farmers starting to use the language of scenario planning”*
- *“absorbed into DPI thinking”*
- *“changed the hypothesis of where to start from”*
- *“a major benefit is the detailed scenario toolkit for others to use”*
- *“it was a catalyst for change – hearing other people around a table talking about the need for change”*
- *“learning about concerns and viability of other industries”*
- *“this was a very empowering process with regard to change”*
- *“the power of the first sessions was in hearing people talk about problems at a level which we all understood”*
- *“good to get a broader perspective than that of your own business”*
- *“most of all, the project was just a good reason to bring people together”*
- *“it would be useful to revise the scenarios in the light of experience this season”*
- *“it helps to overcome resistance to long-term planning; there is always a tendency to make only incremental changes”*
- *“it has changed people’s thinking”*
- *“it brought new blood into the loop”*

On this basis it can be concluded that there have been very powerful learning effects for those engaged in the Irrigation Futures project. The challenges will be to identify the flow-on consequences of these learning effects, and to see whether the lessons are, or can be diffused to those who did not directly take part in the project.

6.4 Impacts in terms of Strategy Formulation

The Irrigation Futures scenarios and their implications have been or are being explicitly used in three major exercises of strategy formulation:

Goulburn-Murray Water (GMW) in planning for reconfiguration of the irrigation distribution system using a detailed Water Atlas of the region with working groups systematically examining scenario implications. Reviews that are part of the GMW reconfiguration planning have documented how much they have used the findings of the Irrigation Futures project.

⁵ Kelly, S., ‘Evaluation of the Technical Working Group Stage 3’, December 2006

However, the process and what it is achieving is not apparently highly transparent to all. Thus *“the GMW reconfiguration of the irrigation distribution system is apparently being carried out by ‘secret planning committees’; we are not sure if they are building on the scenario findings or not”*

GMW is also using the handbook of flexible technologies for irrigation infrastructure developed as an output of the Irrigation Futures project to achieve greater flexibility in their future delivery systems. This is based on acceptance of the need to move from a standard one-size-fits all model of irrigation infrastructure which has prevailed for many years (eg irrigation channels with a 100-year lifetime), to flexible infrastructure, allowing for shorter term solutions to water delivery eg with regard to frequency (daily for greenhouse products, monthly for dairy) or lifetime requirements.

Goulburn Broken Catchment Management Authority (GBCMA) is developing its five-year plan for catchment management.

Other relevant developments in GBCMA are that a Manager position description makes specific reference to implementing the findings of the Irrigation Futures project, and it has set aside a budget for further meetings addressing follow-up to the Irrigation Futures project. GBCMA is also planning to link with the Irrigations Futures project with the ‘ten year celebrations’.

Local Government (Shepparton City Council and the other Shire Councils) is developing land-use planning, including regional economic development, zoning, service provision, environment management, and community development. The extent of the impact of the project in this sector is difficult to evaluate at this stage, as active engagement with the Irrigation Futures scenarios and findings has only recently begun. It had been planned to be underway earlier, but a number of factors intervened. These included other higher priority issues, such as dealing with limited water allocation in 2006, a new Victorian regional planning process, and achieving agreement between the Shires on the joint Rural Strategy development.

These are inevitable and ubiquitous challenges for foresight: to find a space amidst the urgency of the immediate and short-term, and to achieve some synchronicity with the many other processes and changes going on.

Other strategic impacts, which are more difficult to conclusively demonstrate are claims of the type that *“there is evidence of a much greater resilience in the producer community”* ie that the community has a greater capacity to identify and respond to the need to change, and to formulate and take urgent action where it is considered necessary. This constitutes an addition to the intellectual and social capital of the region.

But the impacts are still highly uncertain: *“the jury is still out; it’s just a tool after all”*.

7. Recommendations for Diffusion

There were common expressions of concern about maximising the impact of the Irrigation Futures project as it approaches completion. There appeared to be strong agreement about the need for an appropriate communication strategy in the wind-up phase. This might involve coordinated press releases, a high profile launch of the final report, presentations to the Governance Committee, appropriate Boards, local government, and community groups, and a conference. In addition simple reports (brochures, handouts) need to be prepared for wide distribution.

It is also important to identify and support a number of champions, or ‘ambassadors’, to promote not so much the Irrigation Futures project as its processes, its scenarios and their implications. One suggestion was that members of the Technical Working Group be encouraged to become active ambassadors. To support them *“We need to prepare a short set of key messages for all Ambassadors to disseminate and promote, and a brochure to hand out.”*

There is a view that *“implementation needs to be coordinated, but other organisations have to take implementation responsibility”*. The coordination role would most appropriately fall to an appropriate regional economic development authority, but no such organization exists. It may be that this role could be filled by the Northern Water Commission which has responsibility for water planning for Northern Victoria for the next fifty years. The Governance Committee sees responsibility for adoption as resting with the major clients, namely LWA, GMW, GBCMA, and the Victorian Departments of Primary Industries and Sustainability and Environment.

With the project drawing to a close, there is a concern that *“no-one has ownership of the project once it is completed”*. *“We need to maintain the resource/capability and material so it is available to those who are interested in using it, rather than allowing it to disperse”*.

There is also a challenge to spread ‘the message’ far and wide. *“The challenge is to diffuse the findings and processes to other regions”*. *“We should diffuse the process and the insights through a replication of the process”*. *“This approach needs to be replicated at a larger regional, and even national, level to provide a sound basis for national water policy”*.

There is also a suggestion that there would be value in a comparative study of the approach to and outcomes from the reconfiguration of the irrigation distribution system in the north-western region of the Goulburn Broken catchment, which did not take part in the Irrigation Futures project, and that in the Shepparton area, to identify the benefits arising from the scenario planning approach.

This report is also required to propose possible publishing outlets and the type of content (by way of outline structure) appropriate to each. The following are the proposals:

1. Update the Irrigation Futures website -

http://www.dpi.vic.gov.au/dpi/vro/gbbreg.nsf/pages/gbb_landuse_irrigation_futures?OpenDocument

Websites are the most practical way to make information available to a widely dispersed, and largely unknown, audience. The documentation of the Irrigation Futures project has been extensive and excellent, but only the objectives and Milestone report 1b are currently available.

2. Prepare a detailed case study for the European Foresight Monitoring Network

<http://www.efmn.info/index.shtml?s=3A696432-7D7516104244-1780B>

A relatively modest effort would be required to extract the appropriate information from the excellent documentation of the Irrigation Futures project. A straightforward template is provided into which the relevant characteristics could be entered. This will reach the audience of professional foresight practitioners and policy makers who increasingly scan this site for relevant foresight projects. It may also provide the basis for preparation of a comparative foresight brief on the issue of irrigated agriculture.

3. Prepare a paper targeted at publication in the journal Technological Forecasting and Social Change

This is the major journal dealing with the methodology and practice of technological forecasting and future studies as planning tools as they interface social, environmental and technological factors. It has an impact factor of 0.811

I know the editor well.

The paper should have a strong methodological orientation. The structure would be along the following lines:

Introduction – review of foresight projects focussed on economic and social development in regions based on irrigated agriculture with an emphasis on methodology

Methodology – a relatively brief descriptive treatment of the methods used

Advances in Methodology – based on Section 5 of this report

Conclusions

4. Prepare a paper targeted at publication in the International Journal of Foresight and Innovation Policy

This is a relatively new journal (launched 2005) which aims to further develop insight into the role of strategic intelligence in innovation policy and practice. It covers all types of strategic intelligence. Examples include Foresight, Forecasting, Delphi Studies, Technology Assessment, Benchmarking and Technology Roadmapping.

I am a member of the Advisory Board.

The paper should have an emphasis on the policy/strategy/implications of the Irrigation Futures project. Proposed structure:

Introduction – general introduction reviewing all the problems of getting effective implementation of foresight-based findings

Review of foresight projects focussed on economic and social development in regions based on irrigated agriculture with an emphasis on policy/applications

Case studies of policy/strategy impacts of the Irrigation Futures project: I would suggest the GMW application to infrastructure reconfiguration, the GBMCA application to catchment management planning, and the transformation of the regional capacity to grapple with the challenges of change and the future.

A second preference for the same paper is Technology Analysis and Strategic Management, which presents research on the analysis and assessment of methodological tools for the identification and analysis of key scientific and technological developments.

I am a member of the Advisory Board.

5. Prepare a paper targeted at an appropriate international conference

The most appropriate conference I have been able to identify is the UNIDO 'Technology Foresight Summit 2007 - Water Productivity in the Industry', 27-29 September 2007, in Budapest, Hungary. This would be entirely appropriate, but it is almost certainly too late to obtain a slot.

I would propose that you continue to search for an appropriate conference.

6. Seek to organise a major session at the next ABARE National Outlook Conference addressing the future of irrigated agriculture

Review of Regional Scenario Planning in Practice: Irrigation Futures of the Goulburn Broken Region

by
Q.J.Wang, David Robertson, Leon Soste and Robert Chaffe

22 May 2007

I am approaching the three terms of reference in reverse order.

3. **Is there sufficient detail/are there sufficient examples, within each stage to enable users to understand the detail of how we went about a particular task, and to enable them to be able to modify it or do it differently, according to their circumstances?**

Against this criterion, I believe the report is exemplary. It provides an extremely detailed description of the planning process and content, the governance structure, the elements of the various stages of the scenario planning process, the implications of the progressive findings, at both a general and detailed level, and the communication and evaluation strategies and practices adopted.

In this respect, its description of methodology is far more detailed than is commonly published about foresight projects. As such it undoubtedly provides the sort of detail which would allow users to understand, and make sense of the process, at a very fine level. With appropriately publicity, I believe this detailed description is likely to be a much referenced source of information about how the Irrigation Futures project was conducted. The primary audience is likely to be those concerned with the future of irrigated agriculture, and economic development in irrigation-dependent regions. However, I would expect this study also to enter the general lexicon of high quality, 'best practice' foresight studies.

The issue of support for modification is a more challenging one, as I shall address below in more detail. An experienced foresight practitioner would be readily able to make modifications. Someone with a broader expertise in fields such as change management, strategic planning, etc would likely be able to draw on their experience to adapt the process to their particular needs, based on the ability to distinguish between what is essential, what is modifiable, and what is an adaptation for a peculiar local circumstance.

However, in my experience, it is very difficult for someone with essentially technical or practical skills, with limited insight into the language and processes of the social sciences, to know how to intervene effectively to adapt a process. While it is certainly not beyond the capability of individuals from any walk of life, there is commonly a discomfort, or uncertainty about 'how to go about it', that will limit adaptation.

To address this issue, I believe the report would benefit from an introductory guide to readers. One component of this guide could be directed to those associated with irrigation, suggesting that these scenario planning processes could be applied with benefit to their situation, but probably will need some minor adaptation to meet local requirements eg different decision-making bodies, with different powers, a different range of stakeholders, differing geography and demography, and different time horizons.

2. Is the conceptual framework sufficiently clear for users to understand where they are going at different stages of the project, what they are doing and why?

The conceptual framework is quite clear, particularly for a reader with some experience of foresight or scenario planning. It may be that some greater use of graphics. For example, Table 1 (page 10) appropriately identifies all the components of the project against the six themes and four stages. There is a lot of information in this Table, usefully summarized. But an appropriate graphic might make it easier for readers with a more pictorial mindset to comprehend.

It is this Table 1 which provides the essential tool for addressing the second term of reference, at least with respect to where they are going and what they are doing. While the basis of the Stages is clearly elaborated (page 8), the six main themes are simply identified (page 9). There would be value in outlining in more detail the nature and the rationale of the six themes.

The final component of the term of reference 'and why' raises the biggest challenges. The report on methodology is sufficiently detailed to provide clear guidance for someone willing to follow the steps, and rules, as laid out. The question of why, in a larger sense, would need a much wider frame of reference than this report could ever hope to, or be expected to, provide. I believe it is quite adequate to provide the clear guidelines that the report does, in sufficient detail to enable questioning, but without the capacity to answer, in the report, every one of these questions that might arise.

1. In the broad sense, can it be used by others? Is the document sufficiently clear to be picked up by an unfamiliar user, and (with effort) subsequently implemented?

This report can certainly be used by others:

- i) Foresight aficionados will recognise *Irrigation Futures* as a 'best practice' study, and will draw on its conceptual model, its detailed methodology, its linkage into systems modeling, and its detailed orientation towards implementation, in their academic and practical work.
- ii) The audience interested in the future of irrigated agriculture, and regional economies dependent on it, and the wider audience concerned about water supply and management, will be able to draw a great deal from this project. This

includes direct findings of relevance, and broader insights into how they might tackle comparable challenges in their own context.

iii) Hopefully policy-makers in a range of government departments and agencies will see the relevance of the findings, and of the methodology, to their areas of responsibility. However, it must be acknowledged that foresight and scenario planning have achieved only moderate acceptance in the field of public administration, as evidenced by the limited number of training sessions addressing this approach.

However, the objective of being able to be “picked up by an unfamiliar user, and subsequently implemented is a very demanding one, which I believe it is not reasonable to expect this project to achieve. A central recurring theme in foresight is the extent to which the processes are substantially tacit, best ‘learnt by doing’:

Designing a Foresight exercise is far from straightforward. There is no single best way, as many things depend on the specific context, issues and needs. Every Foresight exercise is different and there is usually a lot of “learning by doing”. Even if an experienced practitioner is involved and may have a mental picture of the exercise at the outset it is likely to evolve in different directions as it progresses. There are also times where Foresight exercises are systematic and recurring activities, in which case it is easier to learn from experience.

Careful thought and planning during the design phase can obviously help avoid serious mistakes. A lot can also be learned from the experience of others who have carried out similar exercises. Some of the issues to be considered when designing an exercise range from the initial positioning in the wider landscape, the major design decisions, to the design of the methodology.

It would be something of an over-simplification to present the issues in sequence. In reality the various steps and decisions are deeply interlinked and may take place in parallel. Therefore, Foresight design will always be an iterative process involving numerous feedback loops. For instance, the amount of resources needed depends on the objectives and the outcomes, but the objectives are often reviewed according to the resources available.⁶

This view is supported by the many experiences of the reviewer in seeking to ‘teach’ foresight, and to guide people, most commonly government officials, through designing and running a foresight project in the countries of Asia, the new accession countries to the European Union, other eastern European countries, trans-Russian countries, and South American countries.

⁶ The FOR-LEARN Online Foresight Guide”,
http://forlearn.jrc.es/guide/2_design/index.htm

It is apparent that the mindset associated with foresight, and most particularly scenario planning, where participants are expected to engage in the construction of a range of possible futures, is anything but obvious or self-evident. No stand-alone manual can provide an 'unfamiliar user' with all the necessary insights and tools to be able to successfully adapt another foresight study's design, processes, management and implementation to their own situation.

Furthermore, there have been many situations where attempts at such adoption and adaptation (for example, in the imitation by a number of developing countries of Japan's Delphi-based projections for scientific and technological development) have produced non-useful, meaningless, or worst of all misleading findings.

I believe this aspiration would be best addressed, in concert with my recommendation under ToR3, by writing another introductory or prefatory section, perhaps entitled 'A Guide to Readers'. This guide should provide some information for various categories of user as to how they might approach the Volume, what they might expect to learn from it, and which sections might be most relevant.

This should also include some general argument, along the lines outlined here, that it is not possible to learn everything about foresight by reading about even the most exemplary project. There are many lessons that can be learned, many tips that can be picked up, many practical insights obtained about the challenge of designing and managing a complex long-term project. But each foresight project is inevitably unique, and the design and processes must be customized for the particular situation, audiences, challenges, time horizon, stakeholders and budget.