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Social Learning and the Adaptive Management Framework

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ABSTRACT

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Over recent years, adaptive management has been espoused as an emerging paradigm for coastal management, yet few institutions globally have committed to its implementation. The research portfolio of the Cooperative Research Centre for Coastal, Estuary and Waterway Management (Coastal CRC) (Australia's peak coastal management research consortium) is based on adaptive management principles. Many projects of the Citizen Science research theme of the Coastal CRC involve partnerships with coastal managers and stakeholders through an action research methodology to understand and overcome the barriers to implementing an adaptive management framework for coastal management. This process focuses on social learning including on-going learning on the part of both communities and institutions for a comprehensive commitment to implementing all stages of an adaptive management framework. In order to facilitate the process of social learning, the Coastal CRC has developed an on-line Toolbox of citizen science strategies <http://www.coastal.crc.org.au/toolbox/index.asp>. The Toolbox includes an annotated bibliography, guiding principles of community participation, as well as, practical examples of community participation tools. One of the key features of the Toolbox is a 'chooser' function that allows individuals and groups to search for tools that best fit their needs. Case studies of the use of various tools are also included on the site to illustrate in detail how each of the tools have been used and participants' reflections on the process. The Toolbox can be used by community groups and decision makers alike and is designed to facilitate more effective community participation in coastal management.

ADDITIONAL INDEX WORDS: *Empowerment, institutions, decision-making, expert panel, Byron Bay.*

INTRODUCTION

The notion of treating environmental management as an experiment to facilitate continual improvement in management approaches has been discussed by numerous authors over the last decade (eg. LEE, 1993; GUNDERSON, HOLLING and LIGHT, 1995). At the heart of effective adaptive management lies the concept of social learning (LEE, 1993), which includes learning not only on the part of citizens, but learning also of scientists, environmental managers, and institutions. While adaptive management has been espoused as the emerging preferred paradigm for sustainable environmental management, few institutions globally have committed to its implementation.

While many tools exist to facilitate the process of social learning, there are few comprehensive repositories of information that include descriptions of a range of participatory tools, guides on how to use the tools, and case studies of their use. In fact, until now no such repositories have been developed within a coastal context.

BACKGROUND

The Coastal CRC (Australia's peak coastal management research consortium) consists of over 200 researchers working in the areas of decision frameworks, citizen science, management and restoration, ecosystem processes, and assessment and monitoring. The Coastal CRC consortium includes partners from local and State agencies, Federal government research groups, and seven universities. The Coastal CRC's mission is to 'bridge the gaps between scientists, decision makers and communities' (COASTAL CRC, 2003) through stakeholder-relevant research. The Coastal CRC is focused on place-based integrated research that takes a whole-of-ecosystem view within an adaptive management framework.

DEVELOPMENT OF A TOOLBOX

In order to facilitate the process of bridging the gaps, the Coastal CRC embarked in 2000 on a three-year research project to develop the on-line Citizen Science Toolbox <http://www.coastal.crc.org.au/toolbox/index.asp>. The Toolbox was conceived to allow an easily accessible on-line repository of information to facilitate more inclusive decision-making.

The Toolbox was designed to be a free resource of principles and strategies to enhance meaningful stakeholder involvement in decision-making. Stakeholders include not only communities, but also scientists and decision-makers. Meaningful involvement of all stakeholders occurs through a commitment to social learning.

However, the Toolbox was also designed to have broader functionality than just a list of participatory tools and includes:

- Relevant theoretical research on citizen science topics (eg. volunteerism, community-based research, communications, stakeholder knowledge seeking and attitude change, and partnerships);
- A list of guiding principles of citizen science to enhance meaningful participatory approaches to decision-making; and
- Links to other citizen science resources including. a searchable annotated bibliography of over 500 references.

The broader functionality of the Toolbox allows a robust basis on which to plan, conduct and evaluate participatory approaches to decision-making. While the Toolbox has a focus on coastal and catchment (watershed) environments, the principles and tools can be used in many other areas for a wide range of issues.

One of the key considerations for users of the Toolbox is that

strategies need to be tailored to fit unique issues, contexts, and stakeholder needs. In many cases, a combination of different tools is required to effectively involve all stakeholders in decision-making.

CITIZEN SCIENCE TOOLS

The Toolbox includes over 60 tools to facilitate meaningful stakeholder involvement in coastal management. The tools range from traditional tools, such as consultative committees and public meetings, to more innovative tools, such as fishbowls and consensus conferences. Once a tool is chosen, a list of attributes are displayed, including:

- An overview of the tool
- Objectives
- Outcomes
- Uses and strengths
- Special considerations and weaknesses
- Resources required
- Target audience
- Appropriate audience size
- User suitability (eg. industry, government, community groups)
- Coastal issue where the tool may be useful
- Number of people required to help organize and use the tool
- Skill level and support required
- Time required
- Optimum participation level (eg. full involvement of stakeholders in decision-making)
- Cost
- Innovation level
- A simple 'how to' method for using the tool
- Further references and resources

The database underlying the toolbox is structured so that stakeholders such as decision makers are able to 'drill down' to the level of detail required for their particular purpose. For example, a stakeholder may elect to scan a number of tools before selecting a tool that seems most appropriate to their situation or combine aspects of different tools to create a new methodology for community participation. Once the desired tool is chosen, a stakeholder may then get more information on how to use it. For example, a stakeholder is able to look at case studies of the use of tools in an actual coastal management situation.

TOOL 'CHOOSER'

A 'chooser' function has been developed for the Toolbox to help stakeholders choose the appropriate mix of tools for a particular issue or objectives, set of stakeholders, or geographic location., The chooser is a simple decision support system that enables stakeholders to enter desired information on a number of parameters, including:

- Purpose of consultation (eg. to discover community issues, develop an action plan, etc.).
- Financial budget.
- Number of people to be targeted.
- Available expertise (eg. computer skills or other specialist skills).
- Timeframe.
- User category - industry, government or community.
- Desired level of participation (eg. information only or stakeholders fully participating the decision).
- Number of people able to help organize and run the event.
- Type of tool (eg. a traditional or innovative tool).

Stakeholders are also able to search for tools alphabetically and each week a different tool is highlighted on the web site.

CASE STUDIES

Case studies allow stakeholders to access information on the application of each tool. This detailed information focuses on participants' reflections on the process and equips toolbox users with a better understanding of the appropriateness of tools to various issues or objectives, sets of stakeholders, and coastal environments. Case studies include instances where either single participatory strategies or combinations of strategies have been employed.

One case study provides an account of the use of an Expert Panel to involve communities, scientists and decision makers in managing coastal erosion issues at Byron Bay (Australia).

The organisers (Coastal CRC and Surfrider Foundation) were motivated to use this community participation technique for a variety of reasons. They believed that the event would contribute to the local authorities' planning process as well as increase the level of public knowledge and participation in the decision-making process. The Expert Panel provides an example of a case study where a tool was used to drive the process of social learning for the community and for decision-makers.

The Expert Panel was an effective strategy to draw knowledge from a variety of stakeholders those with specialized or expert knowledge, those with scientific or technical knowledge, those with indigenous knowledge and those with local knowledge. Involvement of a wide range of stakeholders can ensure that current scientific knowledge is complemented with attempts to deal with uncertainties and value differences through a wider range of knowledge bases and value propositions. The involvement of local community members as part of the Panel was seen as an opportunity to better understand the issue and possible solutions as locals may have empirical information not available to experts.

Preparation for the Expert Panel commenced six weeks before the event. There were four principle organizers. The Expert Panel was organized for a weekend day in order to capture the widest possible community attendance.

In reviewing the event, the Toolbox case study report highlights strengths and weaknesses of the expert panel for this specific task. Strengths include:

- Promoted community participation in decision-making process.
- Council was made aware that the community viewed the current level of public participation as inadequate.
- Significant representation from research and consulting organisations added to the credibility of the event.
- The event provided an opportunity for a wide range of information to be shared.
- The organisation of structured, detailed knowledge sharing sessions reduced conflict by diffusing emotive reactions by participants. By the time all stakeholders had a chance to discuss the issue, they were aware of all viewpoints and appeared aware of all factors.

Major weaknesses in the Expert Panel were:

- Some experts used too much jargon, making it difficult for some to understand the concepts they were sharing.
- Some experts alienated themselves by appearing too formal and not fitting in to the culture of the event. They also failed to consider local context and were perceived by others to present a standard, “sales-pitch”.
- A lack of consistency between the various presenters in terms of the detail of evidence used to support particular points of view.
- Some solutions were arguably not presented in enough detail and this weakened the arguments.
- Council did not readily disclose the options they were considering, making it difficult for the stakeholders to consider all possible options.

- Time was limited because some presentations went over time. This meant that question and discussion time was reduced for panel questions.

CONCLUSIONS

Effective coastal management necessitates an adaptive approach. This approach is driven by a process of social learning learning on the part of communities, researchers, decision makers, and institutions. An on-line Toolbox of citizen science strategies <http://www.coastal.crc.org.au/toolbox/index.asp> has been developed by the Coastal CRC to help facilitate the process of social learning through more meaningful and effective stakeholder involvement in coastal decision-making. The Toolbox can be searched through a tool 'chooser' function, where searches can be tailored to suit individual stakeholder needs (eg. cost, timeframe, audience size, etc.). Descriptions of each of the tools allow stakeholders to view potential tools and also provide a better understanding of the process of organizing and using a particular tool. Case studies also allow stakeholders to better understand the actual use of tools for various issues or objectives, sets of stakeholders, and coastal environments largely through participants' reflections on the use of a particular tool. Other resources are also provided on the Toolbox web site such as related citizen science research, additional resources, and guiding principles for meaningful stakeholder involvement in decision-making. The Toolbox provides the first comprehensive repository of information to help facilitate the process of social learning for effective adaptive coastal management. While the Toolbox has been applied within an Australian coastal management context, it includes tools that have been used internationally and can serve as a resource for coastal communities and decision makers world-wide.

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