ACRONYM : **S**cience **P**olicy **I**ntegration for **Co**astal **S**ystems **A**ssessment

REPORT

INTRODUCING SOCIAL LEARNING: A GUIDE FOR SPICOSA SCIENTISTS

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Purpose: This discussion report was originally produced as part of WP1 (Policy Interface) of the SPICOSA project in order to assist scientists in recognising and facilitating social learning. An earlier version of this work was available to project scientists in May 2007 as part of deliverable D1.2.

Contents

1. Social learning for SPICOSA

The main aim of the paper is to provide some initial suggestions of methods or guidelines for assessing the progress of learning within the SPICOSA project. There is a relatively wide, and increasing, literature base exploring the concept of social learning, including different approaches to learning and lessons regarding its usefulness. However, the issue of evaluating success of a social learning process has not been examined to the same degree. Exploring the idea of success is important from practical as well as theoretical perspectives: knowledge of failure offers opportunities to change tactics and improve the process in the future. From a SPICOSA perspective, assessing progress in learning is essentially reviewing the success of the integrated project since research is all about change, both increasing our knowledge and the nature of our relationships to this knowledge. This includes knowledge transferences between and among experts, policy-makers and the public. Learning is also central to the systems framework which underpins SPICOSA: feedback mechanisms are clear but there are complex patterns of organisation and learning.

This paper is a short discussion document, which seeks to introduce issues associated with social learning to the SPICOSA network, and provide guidance for SSAs about social learning within the context of stakeholder engagement. It starts by very briefly examining the nature of social learning and the processes which define approaches to facilitating that learning. The paper then proceeds to suggest some initial guidelines for exploring the success of learning. As with many dimensions of 'SPICOSA', examining social learning in the context of the project is challenging and there are many dimensions of learning within the project, for example: 1) what are the stakeholder groups learning? 2)

what are we (the scientists) learning? 3) How, through social learning, are we improving the interface between science and policy? And pragmatically, 4) How are guidelines on social learning different to other stakeholder mapping tools in this deliverable? Beginning to address these challenges could bring interesting and useful insights and increase the contribution of the project to integrated, systemic management of the coastal environment.

2. Social learning for Study Site Applications

A further perspective on the relevance to SPICOSA of recognising and assessing social learning, is that it allows stakeholder groups within the Study Site Applications to maximise knowledge integration and gain new insights about management priorities. Choice is a learning process and with any participatory process, it is clear that the full range of options for obtaining the objective(s) of engagement are not known prior to the start of the choice process.   Instead, learners within this process are faced with the certainty that we do not know everything accurately and precisely, and further, that we do not know what we do not know. At a minimum, the 'best' or 'better' means have to be found; however they may need to be invented. Inventory, discovery or creation of new options is critical in gaining more useful insights into the decisions that must be made (Green, 2003). This means that collaborative decision-making and engagement within stakeholder groups can provide more useful insights - and result in 'better' choices - than those generated from any single group member or, similarly, from reviewing the preferences of many group members, without having first facilitated a clear process of group discussion and review. Building on this argument, by giving the study site teams guidelines for reviewing the learning process and facilitating more meaningful learning, the groups are enabled to move further towards the goal of improving the sustainability of coastal systems. Recommendations for facilitating social learning are provided for SSAs in Section 6.

3. Why focus on social learning?

Social learning is becoming increasingly recognised as an essential component in the process of developing sustainable management strategies: many academic papers, reports and case-studies experiences refer, and also testify to this fact. Recognition of the role of social learning transcends disciplinary boundaries, both within social science, but also between the physical and social sciences. Discussions on the concept emerge from psychology, sociology, mathematics, technology, but also, for example, within the research area of co-evolving ecological - socio-economic models and adaptive management.   Gallopín *et al.* (2001) in an argument addressing science for the 21st century, give a perspective on the changing nature of science which provides a very useful summary of the rise in interest in social learning. They suggest that in the place of the reductionist, analytical style that has dominated science, 'a new consciousness of science, systemic and humanistic, assimilating uncertainty and value-commitments, and embracing extended peer communities, is taking up the cause of 'public knowledge'…'(p222).

Learning is a fulcrum around which both scientific endeavour and policy hinges. To learn, is to change, and the purpose of all research is to induce change of some degree. The decision towards a particular policy response reflects a process through which we seek to resolve the conflicts that made the choice necessary and to become confident that one option should be preferred above all others: choice and the progress whereby policy decisions are reached is a learning process (McFadden and Green, 2007). Learning is also a social process; it has many social dimensions where the development of new knowledge, insights and awareness is associated with personal interactions with others in the learning environment (Ewing, 2005). This includes deciding what to do with the range of different interests, knowledge, skills and capabilities which characterise participants within an engagement process.

The authors acknowledge that ideas concerning the facilitation of social learning inherently overlap with recommendations about the best practices of stakeholder engagement and conflict resolution. Therefore, SSAs might also gain meaningful advice from elsewhere in this deliverable concerning effective participatory approaches; this document aims to enlighten about those processes that relate solely to encouraging and evaluating social learning.

4. Defining social learning and approaches facilitating learning

Learning theories consider how individuals think and how this translates into behaviour. Social learning is just one of these theories. Bandura (1977) argues that "Social learning theory approaches the explanation of human behaviour in terms of a continuous reciprocal interaction between cognitive, behavioural, and environmental determinants." This three-way relationship can be seen in Figure 1.
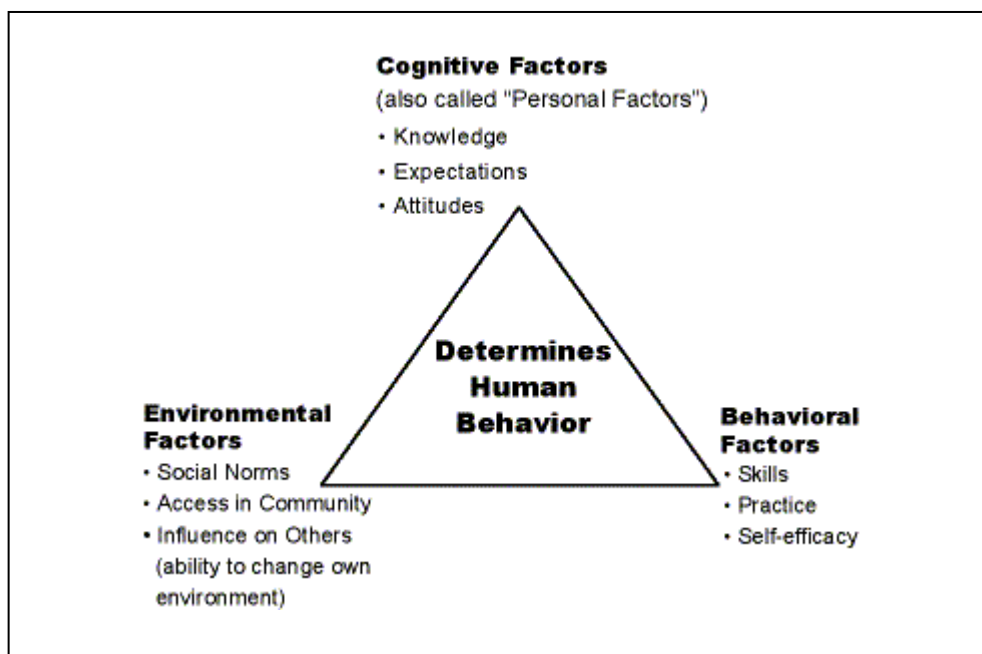

Figure 1:   The three-way relationship that defines social learning
Source: http://etr.org/recapp/theories/slt/Index.htm#definition

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The concept of 'Social Learning' has been identified as an approach and a philosophy which focuses on participatory processes of social change (Simon and Fisher, 2002). It can be regarded as the growing capacity of social communities to perform common tasks by developing new relational qualities and new ways to frame the problems at stake. It is therefore not only about learning facts or technical skills. It is also about learning new ways to conceive the natural and social worlds; about learning a new vision of knowledge and of the relationships of humans with our life support systems; and about learning to create new institutions and processes capable of operationalising these new visions and values. Essentially, social learning requires a new vision about information and knowledge and life systems - one which replaces a conception of knowledge as detached, closed and static, by another where these are seen as open, interlinked systems in constant dynamics - the outcomes of which constantly modify the original conditions from which they emerged (Tàbara *et al.*, 2005).

It is argued that not all learning that occurs in group situations is 'social' (Pea, 1994; Ewing, 2000). What makes social learning distinct is not that the group is working together or even on the same activity, but that they are "working synchronously" for a shared outcome.

A key element of social learning is the interdependence of the learners, on each other, when discussing, examining, interpreting (and reinterpreting) and organising information and experiences, as they are transferred into personal knowledge (Sharan and Sharan, 1992; Ewing, 2000). Social learning has been regarded as a process of sustainability learning; that content, procedures and relational qualities and capabilities of participatory processes are continuously learnt and developed (Tàbara *et al.*, 2005). The need for the process of social learning and associated stakeholder engagement to be reactive and adaptable has been highlighted; "shared thinking involves the need to consider flexibility and change in the individual learner, thereby encouraging the promotion of alternate or parallel views" (Presselen, 1992; cited in Ewing, 2000).

There are a range of different approaches which are compatible with the idea of 'social learning' Simon and Fisher (2002). Some of these are illustrated in Figure 2. Traditional public involvement often tried to 'inform and educate', presuming that that expert decision-making simply needs to 'impart knowledge' to a passive, receptive public who have 'varied perceptions, knowledge and experiences'. However, a constructivist approach to learning argues that people are active sense-makers who are continually assessing their environment and acting according to the ways in which they interpret the situation (Ross and Nisbet, 1991).

This interdependence, and the dynamic interaction of the learners, is critical to social leaning within a stakeholder engagement process. If the learning that is occurring within these situations is imposed (either by facilitators or other stakeholders) effective 'social learning' is not taking place. Social learning is very much about the communication and exchange of ideas, "which in turn lead to more

effective 'sense making' by the individual" (Ewing, 2000; p4), rather than the specific production of an outcome.

- The **'Procedural Approach'** to social learning is based in the disciplines of institutional economics, policy analysis and public choice.

- The **'Socio-Technical Approach'** to social learning is based in the sociology of science. In particular it relates to the actor network theory (ANT), which explores the world through the interconnections that exist.

- The **'Social Learning Systems Approach'** is embedded in systems theory and practice, being strongly influenced by the body of scholarship that is developing a systems 'praxiology' (a theory that informs practice) within the systems discipline.

- The **'Cognitive Systems'** shares much of the thinking and theoretical understanding that underlies social learning systems.

- **'Collaborative learning'** is an innovation designed to address the complexity and controversy inherent in complex situations by combining elements of systems methods and mediation/dispute management.

- **'Organisational learning'** has become a major concern of organisational theory and psychology which attempts to examine the processes of learning.

- **'Ecological rationality'** is based on the biological theory of cognition where the ultimate rationality of the cognitive agent is to maintain structural coupling with its domain of existence.

Figure 2:   *Different approaches to social learning*

(Simon and Fisher, 2002; 1.1.2)

The HarmoniCOP Project have identified mechanisms which foster social learning, relating to; the time and resources available,; the procedures of engagement; and the contents of participatory processes (Figure 3). At an essential level, a process that facilitates more interaction and greater opportunity for dialogue has better chances to enhance social learning. Ewing and Douguet (2007) provide a similar discussion of aspects of the learning experience which impinge on the successful progress of the learner (Figure 4).

Fostering social learning: a summary

- Time and resources: time and resources are needed in order to ensure a close and frequent interaction between stakeholders.

- Procedures: it is important that stakeholders get involved at early stages and during enough time through the participatory processes. Careful attention to process management needs to be taken, and in particular, proficient skills of facilitation and communication of meetings need to be acquired. Furthermore, it is important to make explicit the procedures timings and 'ground rules' that the people involved need to attain so that different stakeholders can participated in the design of the process, besides that of the content.

- Content: win-win situations need to be encouraged, which means that procedures need to be linked to specific outcomes.

Figure 3:   *Mechanisms for fostering learning*

After Tàbara *et al.*, (2005; p43)

i) The demands of the learning task.

There is a widely varying set of circumstances which might relate to the demands of the learning task and most often they will include such features as: new knowledge and understanding; appropriate skills; the complexity of the learning; the standards or levels of learning outcome required; the balance between cognitive and affective aspects of the learned outcome; and how much effort is required from the learners.

ii) The needs of the intended learners.

The needs of the learner will have been explored when establishing the beginning state of learning and will be closely related to the views which users have of their current knowledge and experience. The importance of promoting and maintaining an appropriate level of interest and motivation will relate to factors such as: the length of the task; its perceived importance; the level of interest currently held by the learners; the skills which the learners have in being able to learn cooperatively or individually; and whether the learners have chosen or have been instructed to be included in the learning pathway.

iii) The circumstances of the learning environment.

There is potentially wide variation in the learning environment circumstances and those which must be considered might include: where the learning will take place; how much time is available due to other demands; facilities for learning together in groups or alone; and the atmosphere which the learning environment will create (freedom or constraint).

iv) The resources to be used to promote learning.

The resources will include the facilitators who promote and mediate the learning event as well as the materials that are used. Resources might also reflect predetermined features of the learned outcome such as the integration of information and communications technology (ICT), or co-operative learning where corporate responsibility is required. Resources can undoubtedly influence learning significantly and material (and teachers) may need to be selected specifically fulfil the demands of the anticipated learning outcomes.

Figure 4:   *Elements of learning interaction*

(Ewing and Douguet, 2007; p4-5)

The role played by Information and Communication (IC) Tools is also important to discussions on approaches to social learning, particular their contribution to enhancing the generation of knowledge for sustainability. Research has suggested that the possibilities for mutual learning – including those of the organisers themselves – are reduced unless a 'virtual community of learning' is created and sustained over time (Tàbara *et al.*, 2005). Types of tools that might be used include; decision support systems, internet forums and interactive websites. These would allow stakeholders to remain active outside of face-to-face meetings. This aspect of the social learning process will be further explored in deliverable D1.3; *Design concepts and operational specifications for the deliberation support tool*.

5. Measuring or evaluating the social learning process

5.1   Why measure success and what is successful social learning?

As suggested in the opening paragraphs of this document, the importance of reflecting on a learning process is critical to promoting both meaningful learning and learning at higher and more rewarding achievement levels. Ewing and Douguet (2007) in a discussion of learning pathways, raise a number of issues which provide useful points of reflection on the importance of evaluating learning. Allowing learners to refresh their awareness of their own personal understanding and knowledge, brings into their conscious awareness the relevant known information which will be required for linking with new

learning. Evaluating the learning process provides further insights into the interrelationships between the participants and allows the learners to capitalise on shared views or knowledge in attaining desired learning outcomes. It is often in this way that users can gain greater insights of their own learning; through the visualisation of how they are similar and different from other learners. If social learning can be understood as 'learning together to manage together' (Tàbara *et al.*, 2005), then understanding the success of the learning process is central to promoting success of the emerging management strategies.

However, learning processes are complex and are distributed unevenly among society. They depend on the tasks and roles that actors and organisations play in their contexts of action as well as on the power and abilities they hold (Tàbara *et al.*, 2005). In addition, the skills or training of individual groups also affect their ability to participate. This complexity raises an important question: How can we define a successful social learning process? Our argument is that is success is fundamentally measured by change: change from what otherwise would have occurred or that which does occur elsewhere. Measuring success is therefore centred on measuring some form of change and a second question therefore, in evaluating a learning process is: What are the factors in which we hope to observe change?

We can begin by a simple observation on learning by Ewing and Douguet, (2007) that the progression from one state of learning to another is always in one direction; from a lower state of learning to a higher state of learning. There may be some rare instances when it is deemed relevant to 'unlearn', but these might be more usefully interpreted as replacing earlier and less complete learning. Moving to the specific context of social learning, a successful pathway of social learning is defined by change within the attitudes, skill and actions of participants involved in the learning process.

Tàbara *et al.*, (2005) present a 'ladder of social learning' (Figure 5) which examines different phases or levels of social learning, which correspond to different stages within the engagement process; from cognition, to the framing and reframing of ideas and finally toward more socially-complex relations. They present three "evaluation indicators" which would indicate characteristics of social learning; these include a change in skills, attitudinal change or a change in actions. Measuring the presence (or absence) of these different features would permit some conclusions about whether social learning was occurring.
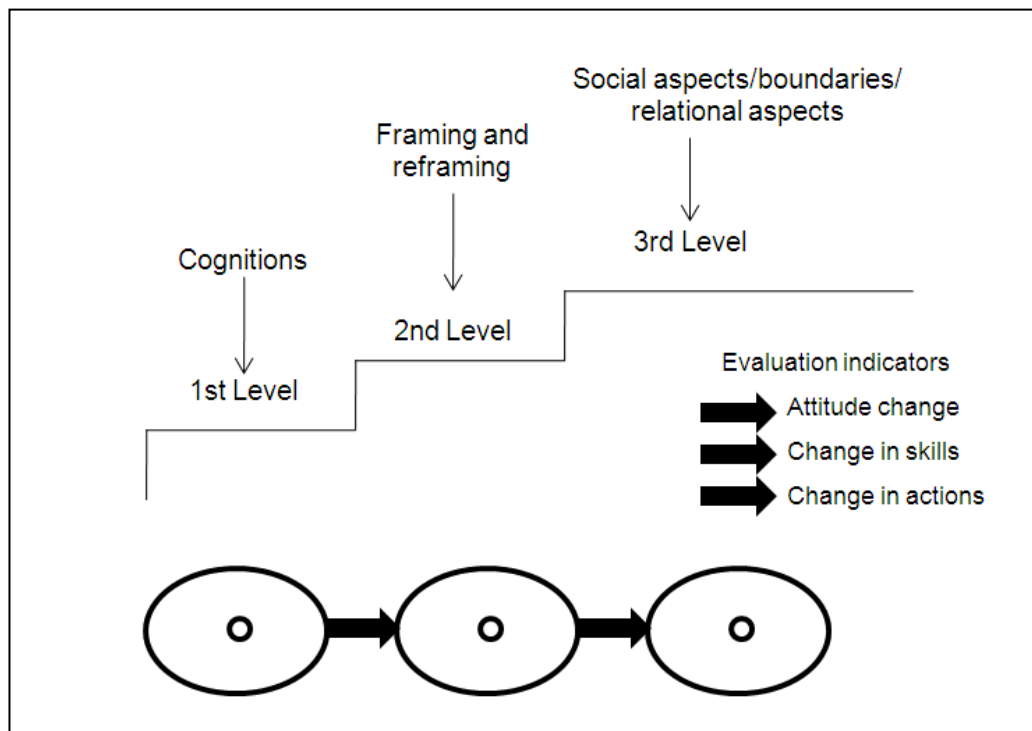
Figure 5:   Ladder of social learning

Source: (Tàbara *et al.*, 2005)

This puts emphasis on the success of the process of social learning or the nature of the relations, rather than on any one environmental outcome. Focusing on social learning in terms of process brings a further criterion for success to the discussion; the continuity of the social learning process. It is clear that the only way to deliver sustainable management is by chaining choices and decisions together so that the strategy is delivered as a whole, then piecemeal approaches will inevitably fail. So, any process of making choices which makes one choice and then abandons the whole process can also be considered a failure. Therefore, success in any one choice is measured by the desire of the participants to repeat and replicate the process for future choices. Building on this simple argument, an effective means of measuring success in a learning process is to seek the stakeholders' evaluation of the process itself. For instance, would they repeat a similar process again for another (or for the same) problem?

Simply however, for many participants in a deliberative decision-making process, the most important solution may be to make to 'better' choices, where 'better' relates to maximizing delivery against some objectives relative to the source required. This means that an alternative way of measuring success would be to examine the degree to which the objectives of the decision-making process have been reached. For example, reaching a desired change in the environment (such as improvements in water quality) or in a management policy or policy process. However, ideally we want to assess the differences in outcomes over the long term. One problem in focusing on environmental outcomes is that we have to make an evaluation of success in the short term, so that corrective action can be taken if the particular instance is deemed a failure, or, if it is a success, to apply those lessons

elsewhere. This means that it has to be possible to make these evaluations early on and on the basis of quite preliminary assessments, when the outcome may be long term.

In any social learning situation all three criterion; a change in skills, actions or attitudes; evaluation of the processes experienced; or outcome success, are all likely to be important indicators of learning. However, in the case of encouraging new and insightful options for Integrated Coastal Zone Management, it may well be that the nature of the relations become more important, in stakeholder engagement, rather than the actual content of the communications.

5.2 Guidelines for evaluating the learning process from the individual learner's perspective

Public involvement is a comparatively recent innovation in many countries and it has been argued that we first need to demonstrate that we can do it at all, rather than becoming concerned with the details of what it is that we need to do it better. Following this perspective, it has been suggested that on a 'learning-by-doing' basis, it may be more useful to ask participants after an engagement event what support would have been useful, rather than seek to start involvement by an exhaustive study into user needs. The latter approach, by stressing the potential difficulty of the task might well discourage people from becoming involved (Tunstall and Green, 2003).

Following this ideal, in the context of social learning, one means of beginning an evaluation may be to ask a series of reflective questions of participants at the end of an engagement process. In SPICOSA, for example, this may occur at the end of each iterative cycle in the SPICOSA framework and could be answered by stakeholder groups and by SSA scientists. Such an initial evaluation might focus on notions of fairness and transparency of the decision-making process and whether stakeholders felt they were included and treated in a fair and consistent manner: thereby evaluating elements of learning interaction and the success of the process of facilitating learning. Questions, for example, might include:

Was the process fair and equitable?
Was each stakeholder treated in a fair and equitable way? Were their views given due consideration?
Were their contributions valued?
Was a sufficient range of options considered?
Did any individual stakeholder or group of stakeholders impose their views upon the group as a whole?
Was adequate technical support and information made available?
Did the process result in any change or was the decision effectively already made?
Did you learn anything from the process?
Did you derive any personal satisfaction or benefits from the process?

However, by defining the key criteria in evaluating successful learning, as change and the sustainability of the engagement process, then we should also be seeking to measure change amongst the stakeholder engagement: the extent and direction of changes that occurred during the process. Thus, it is appropriate to track over the time, starting before the engagement process begins each stakeholders' assessment of:

- Their own knowledge and skills in relation to the choice
- The knowledge and skills of the other stakeholders
- What are the critical issues involved in the choice
- The attitude of other stakeholders towards the process
- The contribution of the other stakeholders to the process
- What the other stakeholders want out of the process
- Attitudes towards each of the other stakeholders
- Personal or organisational preference as to the nature of the course of action that should be adopted.

5.3   Measuring success at broader scales: organisational, societal, science and policy

There is substantial acceptance that much learning (and arguably all learning) starts at the interpersonal level, before developing into more intrapersonal learning (Ewing, 2005). Social learning with representatives from authorities and organisations still takes place between persons. However, when we move from individual interests to the interests of communities or groups of individuals, learning materialises in particular rules and procedures within institutions which are structured by formal mechanisms and work at different levels. This raises the importance of multi-scale learning and the challenges of assessing learning across the range of scales which the learning process bridges. This may range, for example, from individual framing, through to boundaries of institutions and power and scales of geography and time. How we can begin to evaluate learning at the range of scales? This is a relevant question for the SPICOSA project. As relevant, are efforts at exploring some assessment mechanisms of the process of learning across these different scales.

The importance of broad-scale dynamics of the process of learning has been raised within the HarmoniCOP Project (http://www.harmonicop.uos.de/), where a key dimension for understanding social learning centred on analysing how elements in the management framework change during an engagement process (Figure 6.) The project highlights a series of iterative changes that may be expected to occur during such a process; in terms of the context structure, action and processes of a collaborative management framework.
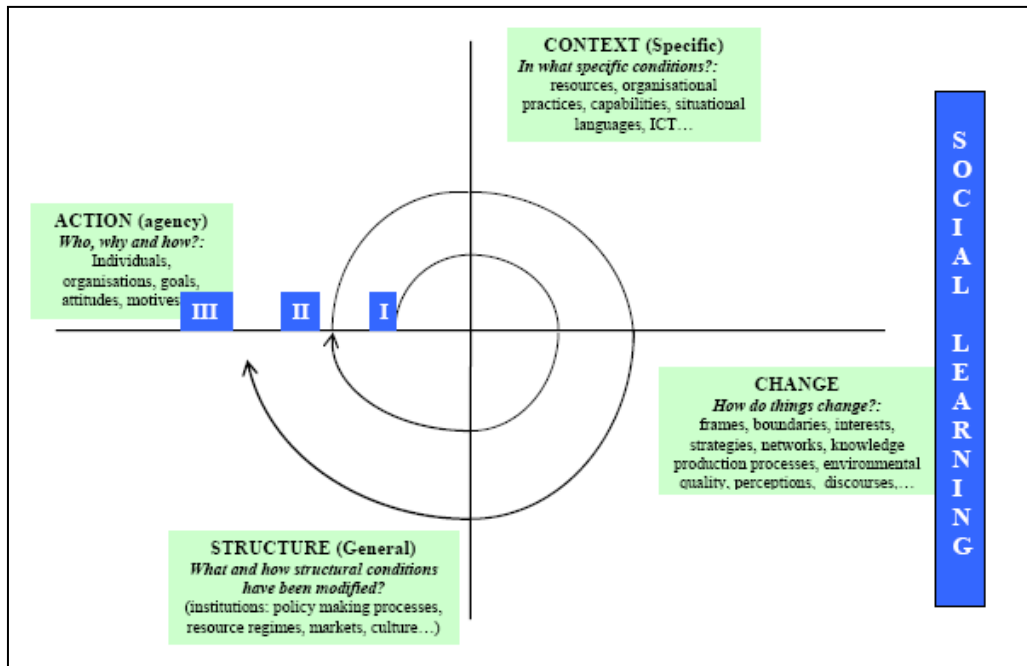
Figure 6:   Social learning as a sequential structural change induced by social action

Key features of collaborative learning have been summarised by Ewing and Miller (2002), which can again provide benchmarks against which we can begin to measure progress (Figure 7). These key resources, amongst the wider range of literature, provide the basis for developing guidelines for practical applications of evaluating learning within SPICOSA. An interesting question that remains to be explored is, the degree to which the existence of known attributes of the social learning process can in turn be used to reflect the success of learning within a stakeholder group. For instance, if an engagement process shows features of social learning, can we assume that it is a necessarily resulting in 'better' decision making, or are there other emerging features that are important to evaluating 'success'?

Key features of collaborative learning

- o Learners have individual responsibility and accountability
- o Learning interaction takes place in small groups
- o Communication during learning is interactive and dynamic
- o Learners can identify their role in the learning process
- o Participants have a shared understanding within the learning environment

Figure 7:   Key features of collaborative learning

Ewing and Miller (2002)

Another example of evaluating social learning at wider spatial and temporal scales may be found in the adaptive co-management literature. There has been significant emerging interests in the adaptive co-management of complex environmental-social and institutional systems (including Turner *et al.*, 2003; Walker *et al.*, 2004; Adger *et al.*, 2005). Adaptive co-management is defined as a process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic, on-going, self-organised process of 'learning by-doing' (Folke *et al.,* 2002). Understanding the differences in the functional scales at which the science of the system and at which the decision-making power operates, and ensuring effective communication and decision-making links across these scales is central to adaptive co-management. This knowledge is also critical to science and policy deliberation and, as such, the attributes of adaptive co-management may become a useful benchmark for social learning at this broad interface. The predominant feature of adaptive management is its focus on systems thinking: considering the human and physical environment to be a complex entity, comprised of dynamic sub-systems reflecting coupled social, economic and geo-biological behaviour through time. In line with this systems-orientated approach and with literature on environmental management – particularly the work of Folke *et al.* (e.g. Folke *et al.,* 2002; Hughes *et al.*, 2005) on resilience of socio-ecological systems – four primary characteristics can be considered as indicative of a successful adaptive management process. These four characteristics are illustrated in Figure 8. These characteristics could provide a possible source of indicators of the evolution of the science-policy interaction within the project; thereby assessing the effectiveness of social learning in improving this critical interface.
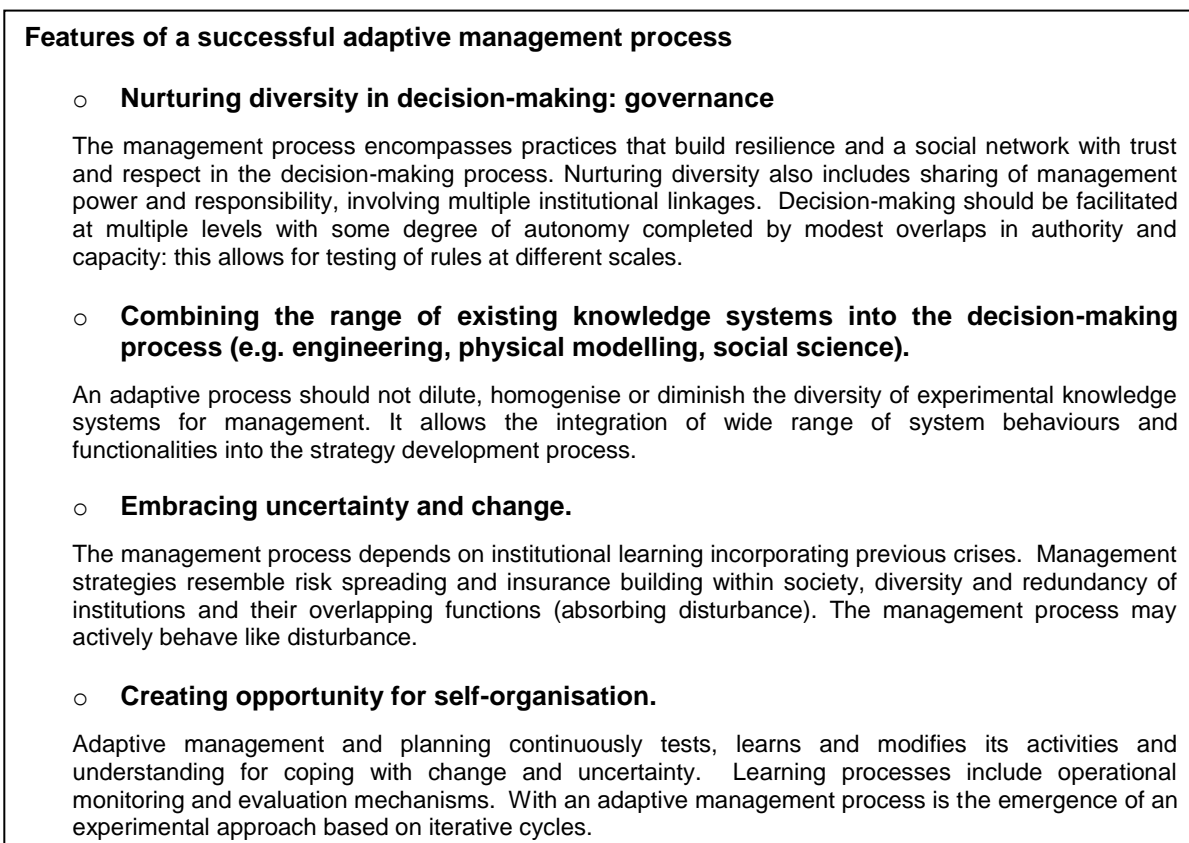

Features of a successful adaptive management process

o **Nurturing diversity in decision-making: governance**

The management process encompasses practices that build resilience and a social network with trust and respect in the decision-making process. Nurturing diversity also includes sharing of management power and responsibility, involving multiple institutional linkages. Decision-making should be facilitated at multiple levels with some degree of autonomy completed by modest overlaps in authority and capacity: this allows for testing of rules at different scales.

o **Combining the range of existing knowledge systems into the decision-making process (e.g. engineering, physical modelling, social science).**

An adaptive process should not dilute, homogenise or diminish the diversity of experimental knowledge systems for management. It allows the integration of wide range of system behaviours and functionalities into the strategy development process.

o **Embracing uncertainty and change.**

The management process depends on institutional learning incorporating previous crises. Management strategies resemble risk spreading and insurance building within society, diversity and redundancy of institutions and their overlapping functions (absorbing disturbance). The management process may actively behave like disturbance.

o **Creating opportunity for self-organisation.**

Adaptive management and planning continuously tests, learns and modifies its activities and understanding for coping with change and uncertainty. Learning processes include operational monitoring and evaluation mechanisms. With an adaptive management process is the emergence of an experimental approach based on iterative cycles.

Figure 8: *Evaluating a management framework from the perspective of co-evolving physical and social systems (After Folke et al., 2002)*

The four Orders of Outcomes model (Figure 9) is a specific example from within integrated coastal management-based literature which could yield lessons for assessing the social learning process within SPICOSA. This model presents a very broad scale approach and aims to group together the sequences of institutional, behavioural and social/environmental changes that can lead to more sustainable forms of coastal development (Olsen, 2003). The four orders of outcome are goals, or indicators of sustained positive progress towards ICZM. The approach highlights the importance of changes in the state of the physical and socio-economic environment; however it focuses on "correlating these" with changes in the behaviour of key partners and stakeholders within the sphere of influence of the management activity. First order outcomes, for example, are societal actions that are required when committing to a plan of action designed to modify the course of events in a coastal ecosystem. They involve building the constituencies and the institutional capacity to undertake integrated coastal planning and decision-making, as well as the authority, funding and other resources that make it feasible to implement ICZM policies and actions. Second Order outcomes include evidence of new forms of collaborative action among institutions, the actions of state-civil society partnerships, and the behavioural change of resource users.   The method is directed at assessing the adequacy of management structures and governance processes as these relate to generally accepted international standards and experience. As highlighted by Olsen (2003), the approach is a 'governance capacity' assessment.
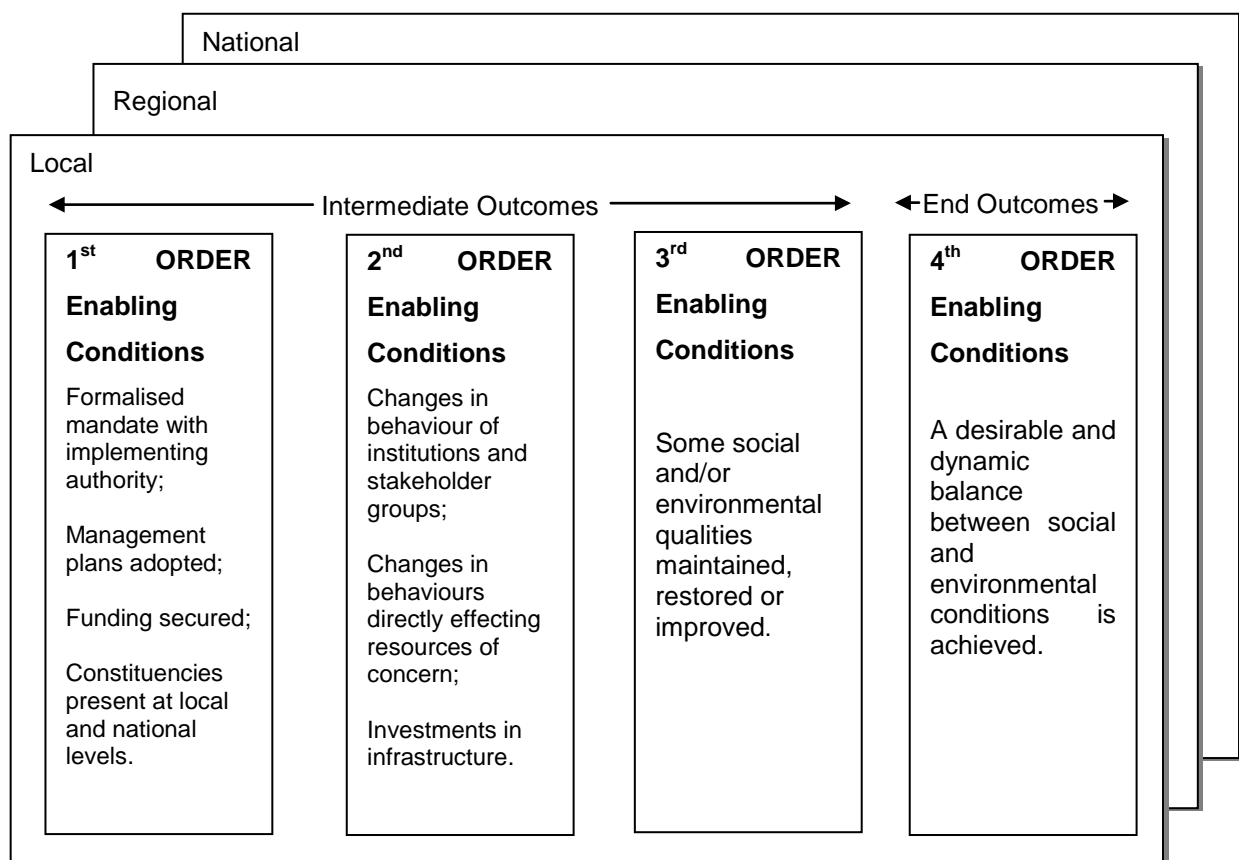

Figure 9:   The four orders of coastal governance outcomes model

(Olsen, 2003)

6. Recommendations on enabling social learning for Study Site Applications

This section re-explores social learning within the framework of SSAs and provides recommendations about social learning from an SSA perspective. The opportunities for and the barriers to social learning at an SSA level and from particularly a stakeholder perspective is examined, before presenting recommendations for facilitating social learning in this context

A range of literature on social learning (including Folke *et al.,* 2003; Tàbara *et al.* 2005; Tippet *et al.*, 2005; Collins and Ison, 2006; Mostert *et al.* 2007; Tàbara and Pahl-Wostl, 2007) has been used to provide information about the rationale for facilitating social learning, the barriers to the approach and social learning recommendations for SSAs. Information about social learning within coastal management is currently limited, therefore it is hoped that the experiences of social learning within other sectors of environmental management (primarily river basin management and water resources management) and will provide relevant and useful examples.

6.1 Rationale for facilitating social learning

Although often a difficult concept to measure and disentangle from other participatory process, the benefits of social learning in promoting sustainable and effective management solutions are clear.

- Social learning is essential to the development of experience to deal with uncertainty (Folke *et al.,* 2003), non-linearities and other forms of surprises: strengthening for example the ability to detect hard-to-reverse thresholds and components of diversity

- The changes that often occur through the processes of social learning ensure that different stakeholders have a better understanding of the opportunities and constraints of other stakeholders, thereby making them more likely to negotiate solutions.

- It helps focus on the importance of understanding differences and recognising the differences that make a difference - failing to appreciate differences can lead to losses, particularly sources of new insight and innovation.

- Social learning seeks to move beyond historically naive understandings of participation – participation is necessary but not sufficient (Collins and Ison, 2006)

6.2 Barriers to social learning

Despite the obvious advantages to the facilitation of social leaning within Integrated Coastal Zone Management, encouraging social learning within consultation and participatory approaches can be difficult. A number of barriers to social learning can be identified. From experiences in river-basin management, examining 10 case studies, Mostert *et al.* (2007) have identified 28 key factors that are seen to be hindering social learning. These factors have been put in order of priority and those that were considered to be most significant are presented here.

- Lack of clarity about role of stakeholder involvement, e.g., form, timing, and aims
- Stakeholders' lack of resources
- Lack of adequate time and resources for the process
- Lack of stakeholders' belief that their inputs would make a difference
- Lack of clarity of the status and aims of the initiative
- Failure to include all stakeholders
- Difficulties in moving to a multiparty approach because of a reluctance to change the governance structure
- Differences in the scale of the project and scale of interest of the stakeholders
- Omission of important aspects, e.g., costs
- Overly technical language
- Contradictory expectations of the way stakeholders want to be involved
- Lack of rules of representation
- Lack of clear and usable feedback on outcomes
- Lack of continuity, e.g., no transfer of knowledge among different representatives of the same stakeholder organization

Mostert *et al.* (2007, p11).

In addition to these, other factors have been recognised as providing potential barriers to the social learning process; such as the presence of inadequate governance structures (Tàbara *et al.,* 2005) and the sensitivly of the process to the initial starting conditions (such as whether there is 'history' between the stakeholders), as well as different traditions of understanding being present. All of these may impact negatively on the process of social learning and an awareness of these limiting conditions is useful to designing a participation process which maximises the potential of shared thinking within a stakeholder group.

6.3   Evaluating learning for SSAs

SSAs can reflect on their own learning and that of their stakeholders through discussion and asking simple questions of themselves and stakeholders. Evaluating the skills, attitudes and behaviour of stakeholders and scientists before and after the process will provide some indication about the levels of social learning. Examples of the type of questions that can be useful can be seen in Section 5.2.

6.4   Recommendations on social learning for SSAs

Social learning is a process that appears to function best when allowed to develop naturally within a well-functioning deliberative situation and is a process that cannot really be forced or learners coerced

(Ewing, 2000). However, as highlighted in Figure 10, there are a number of measures that SSAs can do to try to provide circumstances to facilitate and encourage social learning.

- Ensuring clarity of the roles of stakeholder engagement and in some circumstances the establishment of clear ground rules for interaction

- Manage expectations about the outcomes of the process.

- Organisers or the process should have experience in group interaction processes if possible. This links to the most significant factor that Mostert *et al.* (2007, p9) highlight as fostering social learning being related specifically to the organisers of the stakeholder engagement where success is considered to be dependent upon "personal qualities establishing and maintaining the legitimacy of the organiser".

- Build on positive experiences by explaining to stakeholders where the approach has been useful and introduce how they can benefit from being involved with the process and reassure stakeholders that their participation can make a difference.

- Recognize the diversity and complexity of the different types of mental models and cultural frames that influence problem definition and decision making (Tàbara and Pahl-Wostl, 2007)

- Tàbara and Pahl-Wostl (2007, p4) also advocate building a shared representation of the issues at stake as *"participatory modelling can help to achieve a common ground for problem perception among a diverse group of actors, particularly when the problem is largely ill defined"* This directly supports the notion of encouraging a participatory approach to the stakeholder mapping and issue resolution components of the SPICOSA process.

- Strong leadership and facilitation is required to generate trust and open debate (Tippet *et al.*, 2005). If possible this should be an independent who interest-free and able to take an overarching view of the process

- Ensure sufficient time and resources are available for the process of engagement which means that, within reason, the process should not be forced

- Create an open process that is transparent to all stakeholders. Mostert *et al.* (2007, p9) argues that this can be achieved through "*continuous feedback, dissemination of minutes, questionnaires, comprehensive language, presentations*" and through the documentation and adequate recording of the process.

- Where possible try to engage stakeholders in situations away from the formal decision-making process as Pahl-Wostl *et al.* (2007, p7) suggests that this encourages people to think away from their *"entrenched positions"* which has an impact upon creativity and innovation.

Figure 10:   *Recommendations for the facilitation of social learning*

7. Summary

The primary aim of this document has been to raise awareness of the significance of facilitating and evaluating learning within the SPICOSA research framework. The fact is that, in seeking to move towards a truly social learning experience within the project, we still have a lot to learn! As concluded by the HarmoniCOP team, the 'mission of learning from others entails a humble attitude of openness and active quest for what is beyond our perception and understanding with the ultimate goal being to set up necessary adaptive institutions 'through which the sustainability of the physical-human environment can be promoted and preserved'. This is a pertinent challenge for the SPICOSA research team.

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