STAKEHOLDERS AND EVALUATIVE INTEGRATION: OPPORTUNITIES AND INCENTIVES TO INTEGRATE KNOWLEDGE - SOME CONVERGING THREADS

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In some jurisdictions, the nature of resource management and policy decision making is changing from traditional government-oriented modes towards a model of network governance in which non-government stakeholder groups play a more prominent role. Sustainability assessment requires the integration of different forms of knowledge for the purposes of informing policy or project decision makers, and stakeholders are important contributors to this integration. This paper draws together some converging threads and discusses implications for the practice of impact assessment.

1 Introduction

1.1 Complex problems in Natural Resource Management

As people around the world have tried to embrace the concept of sustainable development the practice of impact assessment has turned its focus progressively towards this challenge.

Much of the challenge arises from the complexity and uncertainty that characterises many issues in natural resource management when attempting to balance consideration of environmental, social and economic factors. As Ferreyra and Beard note (2007, p.271) 'natural resource management issues, embedded in the seemingly endless web of ecological and social interactions across temporal and spatial scales, are characterized by their complexity and uncertainty, by their ambiguity and by conflict'. (Rittel & Weber, 1973; Dryzek, 1987; O'Riordan, 1989). Guerin (2007, p.13) refers to the growing pressures on natural resources worldwide, and describes common problems which include competing objectives espoused by different parties for the same resources (e.g. irrigation, electricity generation, wildlife preservation, canoeing and fishing), growing public expectations of access to nature and for environmental preservation, and business demands for investment certainty. 'All of these demands exist in a context of growing volatility in environmental systems (e.g. more extreme weather shifts), and a growing risk of state changes (e.g. a change in dominant plant or animal species) because ecosystem resilience has been reduced (Folke 2005). These factors combine and interact to create the 'wicked' problems we now face.'

Complexity is inherent in environmental and social systems due to interactions between the two (e.g. competition between abstractive and in-stream uses of water), uncertainty about internal interactions (e.g. do some species have critical roles; how influential are social networks in forming opinions or changing behaviours) and unanticipated threshold effects (e.g. habitat collapse or social 'tipping points').

Nevertheless, Guerin (2007, p.14) expresses the view that complexity can and is indeed managed - "Effectively managing complex interactions and competing objectives requires integrating multiple levels of government, resources users and stakeholders, in a manner that does not result in 'paralysis by analysis' or 'consultation fatigue'."

The maturing focus on sustainability assessment amongst impact assessment practitioners, and the evolution of new approaches to governance in natural resource management are two important institutional responses to the challenges of complexity. Furthermore, in this paper, We suggest that there is a convergence of these two responses (from different

disciplinary perspectives). The evolving recognition of the role and functions of stakeholders - is assessment activities and in governance - is the meeting ground.

The author has been part of a research team in New Zealand on a research programme entitled *Institutions for Sustainable Development*[1]. The main streams of investigation in this research programme have focused on interpreting the concept of sustainable, reviewing theories of decision making, comparing between New Zealand and Scandinavian countries the institutional framework for natural resource management decision making, and reviewing international practice in integrated impact assessment (sustainability assessment) methods.

The remainder of the Introduction provides an overview of the state of integrated impact assessment and the evolving modes of governance in natural resource management. Section 2 discusses a framework for thinking about integrating knowledge and the concept of Network Governance in natural resource management, before drawing together the practical links between the two. Section 3 discusses implications for the practice of impact assessment.

1.2 Sustainability (integrated impact) assessment

The evolution of impact assessment internationally has been discussed by numerous writers (e.g. Burdge, 2004, Baines & Morgan, 2006). During the 1970s and 1980s much impact assessment work was project-related and mono-disciplinary; the various disciplinary streams essentially carried out in parallel. Since then, two important changes have occurred. One was a change of focus - EIAs and SIAs began to be used to assess policies and plans rather than just individual projects. They were applied at a more strategic level, hence the evolution of the terminology Strategic Environmental Assessment (SEA). The second was a change of function - less emphasis on encyclopaedic description, and more emphasis on anticipating environmental and social issues requiring mitigation. They were applied in the cause of anticipatory change management, a function that required a more iterative approach to assessment practice, to be able to accommodate learning and adjustment as it occurred during the process of assessment.

With the emerging interest in sustainability assessment since the 1990s, interest in the need for a more integrative form of assessment also grew. In 2002, Scrase and Sheate produced a paper which documented fourteen distinct meanings of 'integration in environmental assessment and governance'. In Western Australia, Pope et al. (2004) described an emerging taxonomy of integrated assessment practice which distinguished three modes -

(i) an EIA-based assessment, where the basic one-dimensional mode of assessment is replicated in the so-called 3-pillar form of parallel assessments of environmental, social and economic changes;

(ii) an objectives-led appraisal, similar in nature to Strategic Environmental Assessment, in which the assessment is carried out within the explicit framework of established policy goals and principles, except that once again it is replicated in the so-called 3-pillar form of parallel assessments;

(iii) a principles-based assessment, with the attribute of being objectives-led, but where the objectives are derived from broader sustainability principles.

Pope et al. further differentiated these three modes in terms of their capacity for supporting the achievement of sustainability goals and principles. They drew a distinction between

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modes of assessment which provide information on “direction to target” (i.e. they tell us whether or not a proposed project or policy is supportive of sustainable development goals and can be expected to make some progress towards achieving those goals) and modes of assessment which provide information on “distance to target” (i.e. they tell us not only whether or not a proposed project or policy is going to make positive progress towards achieving such goals, but how much progress can be expected.) In summary, they suggested that the first two modes of assessment described above provide information on “direction to target” while principles-based assessment should provide information on “distance to target”.

Baines and Morgan (2006) completed a literature-based review of integrated impact assessment methods and tools. Two other literature review exercises contributed substantially to informing their conclusions. They were the reviews coordinated by Dalal-Clayton and Sadler (10) under the auspices of the International Institute for Environment and Development (IIED) on behalf of the Norwegian government, and by Brinsmead (2005) for the Australian National Academies Forum. These two substantial efforts grew out of similar interests, but occurred entirely independently on opposite sides of the globe and adopted fundamentally different approaches. Their two lines of enquiry - the tool-box of integrating tools and methods, and the articulation of fundamental integrative functions - have the potential to be complementary; the latter is useful in helping understand the potential relevance of the former to various practical impact assessment situations.

Some of the substantive findings of Baines and Morgan (2006) will be referred to later in this paper. At this juncture, attention is drawn to a dominant theme implicit in much of the literature reviewed - that substantive integration is not merely an analytical and intellectual exercise. Several papers (e.g. Jones and Lucas, 2000; Bosshard, 2000) describe approaches to substantive and policy integration by emphasising the development of ‘a common framework’ by those involved in the assessment activity; in other words, a framework for assessment that participants have in common or agree to adopt as a result of exchanging views. These and several others (UNEP, 2004; Peet and Bossel, 2000, Endter-Wada et al., 1998) also emphasise stakeholder participation and iterative/cumulative assessment procedures as being a fundamental ingredient of integrative processes - essential for incorporating diverse sources of knowledge, for incorporating community values with technical assessment, and for incorporating new knowledge and understandings gained during earlier stages of assessment.

1.3 Modes of governance

As part of research on *Institutions for Sustainable Development,* Palmer et al (2005) conducted a literature review of theories in economics and social sciences that could be used to explain organisational behaviour, particularly in the context of resource management decision making. They noted that social scientists have recently been describing an evolution in Western political systems from hierarchical, unitary governments that govern by means of law, rule and order, to more horizontally organised, and relatively fragmented systems that govern through self-regulating networks. This describes a move from the age of bureaucratic government to the age of ‘network governance’, or from “government to governance” (Eggers and Goldsmith, 2004). The new model is characterised by a web of multi-organisational, multi-governmental, and multi-sectoral relationships, which shape and deliver policy through networks of public and private actors. The phenomenon described has resulted in an emerging body of theory known as Network Governance Theory.

Sorenson (2002) suggests the causes of this evolution include “the increased importance of international political institutions; new administrative techniques promoting institutional self-regulation within the political systems, and intensified cooperation between public authorities and private actors, be it market actors or actors within civil society.” Eggers and Goldsmith

(2004) argue that as a result of this evolution the era of hierarchical government bureaucracy, the predominant organisational model used to deliver public services and fulfill public policy goals for the last century, is coming to an end. As a result governments perceive a shift in their responsibilities from "managing people and programs to coordinating resources for producing public value." Consequently government agencies "are becoming less important as direct service providers, and more important as levers of public value."

Eggers and Goldsmith see the rise of networked government representing a convergence of two major trends: the growth of outsourcing to private sector and non-profit organizations as an alternative to using government employees to deliver services and fulfill policy goals; and the movement towards more integrated, or 'joined-up', service delivery by dismantling the silos of traditional government and finding ways for agencies to better share information and coordinate their efforts. In this latter case there may be connections with the intended integrated decision-making of sustainable development and the use of networks for making such decisions. Arguably therefore, network governance is a key component of the sustainable development approach.

Devolution and self-governance have become common approaches for democratic institutions throughout the world in the Network Governance age. Many conceptions of successful sustainable development, as exemplified by 'think global, act local,' require individual and collective action at the lowest levels of community (for example, Agenda 21 initiatives). This often implies devolving management responsibilities to the lowest levels possible, as has been done in New Zealand for natural resource management. Ferreyra and Beard (2007, p.271) observed that "Collaborative, integrated water management (CIWM) is one of the major alternatives that emerged in North America during the 1980s as part of the trend towards more holistic and participatory approaches to natural resource management (Lang, 1986; Margerum, 1997). They note that, over time, collaborations have become more inclusive. Initially collaboration occurred amongst public agencies and different levels of government which shared jurisdiction "in the fragmented water landscape" developing a new concept of shared governance. Experience with implementing the decisions of such government agency collaboration stimulated further interest in incorporating private (e.g. land owners) and other non-governmental actors within the governance network. "In this context, CIWM aims to address complexity and uncertainty by recognizing the interdependence of natural and socio-economic systems on a watershed basis, emphasizing stakeholder involvement in both decision-making and implementation."

In discussing the characteristics of governance structures that could be responsive to the need for resilience and adaptability inherent the concept of sustainable development in the New Zealand political context, Guerin (2007, p.13) makes the point that -

> *"adaptive governance aims to create institutions that can bring together a range of stakeholders and knowledge, commit to action at the necessary spatial and temporal scales, and evolve as demands and circumstances change. An adaptive governance structure would need to co-ordinate multiple stakeholders, perspectives, knowledge bases and goals across levels of government, national and regional dimensions. It would also support multiple policy instruments, communications methods, participation processes and timelines. Co-ordination and integration are major challenges but also unavoidable ones."*

To conclude this section, Network Governance itself may be emerging as a useful tool in promoting more collaborative policy and project development reflecting a change to more inclusive and horizontal decision-making structures.

2 Converging threads

2.1 Integrating different forms of knowledge

Baines and Morgan have reported elsewhere (Baines and Morgan, 2006a and 2006b)[2] on their recent literature review of the practice of integrated impact assessment. The range of source material is described, as well as the particular features which make the analysis of Brinsmead (2005) so distinctive.

In May 2002 the Australian Academy of Science hosted an internet symposium with the theme of "Transition to Sustainability". In that conference, participants set out a blueprint for achieving "a mature sustainability science capacity" for Australia, whereby "maturity is to be characterised by suitable multi-disciplinary integration" (National Academies Forum, 2005)*.* One finding of the resulting study (Brinsmead, 2005, p.7) is that while there are a large number of projects conducted nationally that could arguably be classified as integrated sustainability assessments -

> *"...the methodologies employed are not only extremely diverse in range, but invariably not explicitly articulated in easily accessible publications."*
>
> *"Most of the successful integrative experience to date has been due to learning-by-doing and much of the practice is informal. While there are a number of studies that appear well-integrated in practice, neither the methods nor the methodological principles for achieving successful integration are usually documented".*

Nevertheless, this work produced an in-depth review of integrative practice focused around exemplifying a set of fundamental integrative functions.

Choosing to focus on 'fundamental integrative functions' reflects a need to remove the ambiguity and lack of clarity which pervades much of the literature and discussion of integration and integrated assessment. This ambiguity and lack of clarity is one source of the uncertainty experienced by many practitioners and clients of impact assessment regarding the practice of integrated assessment.

Brinsmead's framework for integration appears to have come out of a combination of deductive and inductive thinking: using his initial analytical framework to help direct and illuminate the case study experience (the deductive approach) while also using the case study experience to test and refine that framework (the inductive approach). In our literature review, this is one feature which distinguishes the Brinsmead material from others, and makes it potentially richer in insights. To do so, Brinsmead interviewed some of the research participants and practitioners, rather than relying simply on reading documentary outputs.

So what does Brinsmead suggest are the essential integrative functions in integrated impact assessment? In his own words -

> *"The framework is a classification of integrative functions. Methods used in integrated sustainability assessment integrate within one of four integration domains: empirical description, evaluation, strategy development and policy context. The case-study analysis reveals the significance of a fifth important integration, mutual integration* ***among*** *the four integration functions."*

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[2] Both can be downloaded from http://www.tba.co.nz/frst_projects/frstproject_ECOLOGIC.htm

This five-part taxonomy is presented in the following table. Corresponding to each integrative function is Brinsmead's statement of the functional role each plays in the integrated assessment process. A more detailed discussion can be found in Baines and Morgan (2006a).

Table 1 Integrative functions and their associated roles in integrated impact assessment

Integration domain	Integrative function	'Parts' being combined	Functional role
empirical description	descriptive integration [D]	multi-disciplinary sources of knowledge, experience, observations and partial descriptions of the system of interest	anticipative prediction
evaluation	evaluative integration [V]	predicted impacts and explicit criteria or specified outcomes; evaluative criteria across non-commensurate domains of analysis	strategy appraisal
strategy development	strategic integration [S]	alternative policy prescriptions/project designs; analytical values subject to adjustment or trade-off	selection of specific interactions
policy context	contextual integration [C]	perspectives and interests of stakeholders (formal and informal); the 'system of interest' and its 'institutional environment'	ensure socio-political legitimacy, coordination with related policy processes and institutional support
assessment process	mutual (functional) integration [M]	the four integrative functions described above; processes for achieving these	ensure the other four functions are carried out in a mutually compatible and consistent manner.

It is evident that stakeholders potentially have several important roles to play in integrating knowledge in assessment procedures.

Most explicit are the roles associated with contextual integration - to ensure the socio-political legitimacy and relevance of the assessment; to link the assessment to decision making processes; to articulate stakeholder perspectives and values - and descriptive integration - to assist in developing a 'common framework' and ground truthing understandings about cause-and-effect relationships.

Increasingly, stakeholder groups have roles in evaluative integration - either formalised multi-criteria assessments or informal, consensus-based decision making - and strategic integration - negotiating and re-formulating acceptable trade-offs that recognise and balance sufficiently the interests and goals of the participating stakeholder groups.

Thus it is that stakeholders assist with integrating knowledge in sustainability assessment activities - clarifying assumptions which frame the scope of assessment, understanding inter-relationships within natural resource systems and also between socio-economic systems and natural resource systems, assessment of likely outcomes, strategic optimisation which links stakeholder goals and values, and expected outcomes.

One of the distinguishing features of Brinsmead's taxonomy of integrative functions is the specific focus on what he terms 'mutual integration' - the deliberate planning and coordination of activities which support the other four integrative functions. The main point to focus on here is that the other four integrative functions are carried out in a mutually compatible and consistent manner. For example, the integrated description of the system should reflect those elements of the system which stakeholders agree are important to acknowledge and understand; similarly, the evaluative criteria should reflect the general normative criteria (including values) pertinent to public policy outcomes and customised to

locally-relevant conditions, and the integrated description should enable 'modelling' to predict possible consequences in terms of the criteria selected for integrated evaluation and endorsed by stakeholders. From a contemporary sustainability assessment perspective, the systematic links between stakeholder involvement and knowledge integration are reinforced within this concept of 'mutual integration'.

Even though most integrative functions are characterised by informal processes and (currently) by tacit knowledge, a commitment to integrated impact assessment suggests an obligation to manage the overall process for consistency. The fact that Brinsmead concluded from his review of current practice that this occurs very rarely indicates the need for mutual integration to be a specific focus of attention in its own right. In practical terms, mutual integration is most likely to be achieved if an iterative methodology is employed. A methodology that is deliberately structured in an iterative manner facilitates the repeated testing and review of links between context setting, system description, evaluation and strategic option choosing activities.

2.2 Network governance and natural resource management

Network governance principles are achieving greater prominence in the area of natural resource management in a number of jurisdictions. Salmon et al. (2005) have discussed this in relation to Nordic countries, while Ferreyra and Beard (2007) describe some Canadian experience, and Guerin (2007) posits its wider applicability in New Zealand.

This focuses attention on the role of stakeholders in such governance processes and elevates a range of issues about how stakeholder engagement processes are managed. The issues highlighted here are those which demonstrate the connections between stakeholders involvement and knowledge integration.

In exploring the potential for market-based instruments (MBIs) to be adopted as policy tools to achieve sustainable development outcomes in New Zealand, Sinner et al. (2007) found that social and community norms can be an obstacle to the introduction of MBIs, especially where they help to protect the interests of key stakeholders, but values-based opposition can be overcome if stakeholders are involved early in assessment and instrument design, and their practical concerns are addressed. Furthermore, rarely do projects or policy initiatives have a single objective, particularly when viewed from the perspective of existing resource users, future investors, public administrators or other stakeholder groups such as community or environmental advocacy groups. When multiple objectives have not been reconciled into an agreed vision or collective statement, broad-based support is difficult to achieve (Palmer et al., 2005). Reconciling differing stakeholder objectives has to involve their active participation. This is part of contextual integration. Furthermore, in working to reconcile goals and objectives, these stakeholder representatives will want to be informed by a shared understanding of the situation and circumstances - this involves descriptive integration - and an understanding of the range of likely outcomes of their collaborative networking - this involves evaluative integration.

In their evaluation of collaborative integrated water management in Canada, Ferreyra and Beard (2007, p.285) found that one of the basic premises of watershed partnerships is that collaboration enables a group of organisations to pursue goals that could not be achieved by organisations working alone, by pooling skills and resources, sharing information, and learning about their different perspectives. In order to achieve partnership synergy, 'collaborative advantage' for all member organisations should first be created or enhanced. This involves working to develop and emphasise benefits not only for the partnership as a whole, but also for every individual and organisation involved (e.g. access to credible data, learning opportunities, support for individual initiatives, local relevance, etc). The major lesson is that strategic focus should not be dominated by one or two members of the

partnership; there needs to be something in it for everyone. While at one level this highlights the need for a carefully managed process, it is also a lesson about strategic integration.

Ferreyra and Beard (p.283) also discussed the "inherent tension of CIWM as both a technical and a social process" and indicated that the partnerships "addressed this tension by adopting long-term collaborative management goals (building capacity, creating alliances and developing a better understanding), and by establishing water-related ones (improving water quality and reducing runoff). These different types of goals have the potential to integrate the 'technical' and the 'social' in water management."

The analogy with Brinsmead's 'mutual integration' focus, is even stronger in another finding from Ferreyra and Beard (2007, p.286) -

> *"Watershed partnerships need resources to improve water quality and quantity, and to build and sustain stakeholder collaboration. These resources include connections and networks; information and knowledge; inter-organizational leadership; legitimacy and credibility; money; space and equipment; skills and expertise; and time (Margerum, 1999; McQuaid, 2000; Lasker et al., 2001; Smith & Gilden, 2002). The 'process evaluation' ... identified 'inter-organizational leadership' not only as the most important resource, but also as the resource that can act as a bridge to other resources (Agranoff & McGuire, 2001). ..... leadership allows a partnership to draw from stakeholders' connections and networks, providing access to relevant knowledge and information as well as skills and expertise. ..... Inter-organizational leadership requires an effective but at the same time democratic leadership style that empowers participants to respectfully engage during discussions, allowing for constructive disagreement to enrich both dialogue and action; requires strong technical but even stronger interpersonal skills."*

Investigating the information and science pre-requisites for adaptive governance, Guerin (2007, p.22) concluded -

> *"Scientific data alone will also not always be sufficient. When dealing with social- ecological interactions, dialogues among scientific disciplines and between scientists, users and the public can be an important step (Dietz 2003). Without engagement, participants often won't trust results or have trust in the research programme and its results (Leitman 2005)."*

This is similar to a finding from Ferreyra and Beard (p.284) when discussing watershed partnerships formed from multiple stakeholders with different values, perspectives and experiences -

> *"A critical factor during the collaborative planning stage is achieving a balance and taking advantage of the different types of knowledge and expertise (scientific, experiential, contextual, formal, informal, etc.) available in a partnership (Rhoads et al., 1999; Ewing et al., 2000; Bowen & Taillieu, 2004; Delli Priscolli, 2004). Scientific knowledge and technical expertise, albeit highly relevant for CIWM (Leach et al., 2002), should not dominate and determine the end result of the collaborative planning process (Freebairn & King, 2003; Eshuis & Stuiver, 2005)."*

Thus it is that processes which involve groups in integrating diverse sources of knowledge and information can also enable the groups to achieve their governance roles more effectively. Analysis from a governance perspective appears to reinforce experience gained in impact assessment practice regarding stakeholder involvement -

- community norms and the range of stakeholder values need to be acknowledged through the early engagement of stakeholders in network governance processes;

- pooling skills and resources and sharing information is a basic premise of some network governance arrangements and is important to building trust amongst stakeholders;

- a dual focus on resource-related goals and collaborative management-related goals is one aspect of integrating technical and social dimensions;

- inter-organisational leadership is a critical resource for network governance, analagous to leadership in participatory and inter-disciplinary assessment activities.

2.3 Links between integrating method and network governance

To appreciate the link between integrated sustainability assessment and multi-party decision making/governance processes, it is useful to reflect on the links between integrating method and stakeholder participation, since stakeholder representatives are involved in integrated assessment and in decision making/governance processes. Indeed, the main thesis of this paper is that these multiple roles for stakeholders reflect an increasingly unified approach to the pursuit of sustainable development in many jurisdictions - and this is largely because of the roles they play in integrating knowledge.

While in the so-called developed world, the focus of sustainability assessments and sustainable development policy could be said to have been primarily on inculcating social considerations into the traditional environment-economy discourse, the emphasis for so-called developing countries is more likely to have been on inculcating environmental considerations into the traditional social development-economy discourse. As reported by Ferreyra and Beard (2007, p.2), "the 'transfer' of the CIWM paradigm to developing countries implied the incorporation of a different set of challenges and imperatives, such as economic development and poverty reduction (Jonch-Clausen & Fugl, 2001). Alternative conceptualisations deemed to be more representative of the perspectives, needs and realities of the developing world are now emerging from within that region" (Merrey et al., 2005).

In reflecting on the links between integrated method and stakeholder participation, both perspectives are instructive. For decision making, integrated knowledge is used to address various stakeholder goals. In a sense, stakeholders involved in resource management decision making create a demand for such integrated knowledge; knowledge that recognises diverse viewpoints and goals and allows for the incorporation of diverse sources of knowledge into the overall body of knowledge available to decision makers. In integrated assessment, stakeholders assist with integrating knowledge, both in terms of their role in contextualising the assessment and in terms of providing elements of local knowledge which can be important for ground-truthing scientific expert knowledge.

It is hardly surprising that those involved in resource management governance matters should have an interest in issues to do with stakeholder engagement. Over the years, impact assessment practitioners have become increasingly aware of the need to involve stakeholders in their assessment activities.

In summary, effective integration of knowledge needs stakeholder input. However, for effective stakeholder input, there is a need to match stakeholder involvement in assessment with stakeholder involvement in decision making; similar interests may be represented, even though the personnel involved are likely to be different.

3 Implications for Impact Assessment

In their 2006 review of methods and tools for integrated assessment, Baines and Morgan (p.22) summarised the overall goal of sustainability assessment[3] as being to address the economic, social and environmental interdependencies within policies, plans, legislation and projects, in order to complement and extend traditional assessment and decision-making processes and enable more inclusive and informed decision making.

We have argued in the preceding sections that stakeholder involvement is important to integrated assessment and to network governance. From both perspectives, there is growing interest in the knowledge-integrating roles of stakeholders. Furthermore, we believe that experience is demonstrating that process issues - in other words, issues for managing the process of stakeholder involvement - are critical from both perspectives.

These are the converging threads. It remains therefore to ask what the implications might be for the practice of impact assessment.

Traditionally amongst the various strands of impact assessment, Social Impact Assessment (SIA) has led the way in stakeholder engagement; perhaps of necessity, since it has been central to methodology for some time (Burdge, 2004; Taylor, Bryan and Goodrich, 2004; Becker and Vanclay, 2003). Stakeholders have relevant information that can only be obtained by engaging them in the assessment activities. Moreover, professional practice has evolved from an early focus on identifying impacts to a contemporary focus on helping stakeholders identify mutually acceptable 'solutions' that mitigate a range of issues and outcomes.

This is where the convergence is happening. Participatory assessment is an approach to finding mutually acceptable outcomes by 'getting stakeholders together' to negotiate matters of consensus and resolve issues of difference. The stakeholders themselves (or their representatives) have to do the integrating.

From this theoretical and practical base, some principles have long been established -

- stakeholder engagement should occur early in the assessment process; wide engagement from the start improves problem definition and buy-in, with social networks facilitating information flow;
- all parties should be clear on the scope of their involvement and be realistic about the procedural outcomes of participation;
- building trust amongst the parties is important to achieving a robust assessment, and this takes time and several iterations of meetings and discussions;
- it is important to acknowledge stakeholders sources of knowledge, that they are 'experts' too, in their own way, and that their observations and values are legitimate information inputs.

Against this background of past understanding and practice in impact assessment, what insights can be added if the observations from integrated sustainability assessment and from governance perspectives are drawn upon.

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[3] Since this paper is being presented within the Sustainability Assessment stream at the IAIA'07 conference, we have adopted the terminology 'sustainability assessment' where hitherto we have used the terminology 'integrated impact assessment'. These terminological links are discussed on p.3 of Baines and Morgan (2006).

We suggest the following -

- processes for integrating knowledge or for managing stakeholder participation in assessment activities still tend to be informal and undocumented: better documentation of integrating activities and procedures is necessary for learning by others and improving future practice.

- being clear about the goals of stakeholder involvement is just as important as it used to be, but perhaps the scope has expanded over time: a shift has occurred over time from merely consultative or advisory roles to being integral participants in assessment activities or to having governance responsibilities.

- the range of contributions possible from stakeholder involvement has expanded: the clarification of distinct integrative functions (contextual, descriptive, evaluative, strategic) highlights this expanded range, as discussed previously in 2.1.

- stakeholder involvement in assessment should be related to stakeholder interests in decision making/governance arrangements: this does not imply that stakeholder representatives are necessarily the same in assessment and governance roles, however, the range of stakeholder interests likely to be recognised by governance or decision-making bodies should be reflected in the range of stakeholder interests invited to participate in assessment activities.

- the process of sustainability assessment takes place over an extended period during which stakeholders meet, exchange and discuss information as a group, while continuing to interact with their own constituencies and the wider public: managing 'group' messages vs individual stakeholder messages during this period or, as Guerin (2007, p.23) puts it "keeping everyone 'in the tent'", may require careful attention to group and individual responsibilities.

- stakeholder involvement in impact evaluation would benefit from their prior involvement in contextual and descriptive integration stages, and also requires their prior involvement in negotiating indicators for evaluation.

Others may deduce additional insights from the converging domains. Overall, these lessons suggest a higher level of sophistication in managing stakeholder processes. This no doubt reflects the fact that the institutional setting in which sustainability assessment is being carried out is markedly different from that in which early practitioners of EIA or SIA operated, even a decade or two ago.

Managing the process of stakeholder involvement continues to be of paramount importance, with leadership in this area being a critical role, but not always a role taken by impact assessment practitioners. Other gatekeepers in this process are typically lawyers, public relations people, or the client organisation itself, and this poses a challenge to impact assessment practitioners, because these professions bring entirely different logics to the task.

4 Conclusions

This paper began by establishing the reference point of discussion as the pursuit of sustainable development outcomes in natural resource management decisions. The maturing focus on sustainability assessment amongst impact assessment practitioners, and the evolution of new approaches to governance in natural resource management are two important institutional responses to the challenges of complexity inherent in the pursuit of sustainable development.

Demands for better integration across the various sectoral strands of impact assessment and for improved stakeholder involvement have been familiar to impact assessment practitioners for some years[4]. These calls are now reinforced by emerging insights on Sustainability Assessment and by developments in governance arrangements. It might therefore be said that demands for better impact assessment practice are coming from both supply-side and demand-side interests.

The practice of impact assessment has a critical role in facilitating participation of the relevant network of stakeholders, integration of knowledge, and the effective use of this knowledge by decision makers with governance responsibilities.

The development of professional practice in response to these challenges will be essential to maintaining the relevance of impact assessment for public decision making on matters of natural resource management. More than that, the attention of professional bodies, both national and international, to promoting systems of reporting and continuing professional education about these challenges, will underpin the success of any attempts to develop a mature sustainability science and governance capacity.

[4] More than 600 practitioners of various categories of impact assessment attended the 20th Annual Meeting of the International Association for Impact Assessment (IAIA) in Hong Kong in June 2000. These practitioners took part in 27 parallel streams of papers and discussions aimed at reviewing methodological progress at that time, identifying methodological needs and developing vision statements for the practice of impact assessment over the following 10 years. Nineteen out of the 27 streams (6) identified the need for integration between the disparate streams of assessment activities and practice. In other words, many practitioners had experienced the limitations and frustrations of working in artificially partitioned ways, and were calling for change towards a more integrated form of professional practice.

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