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**Stakeholder Participation for Environmental
Management: A Literature Review**

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**Stakeholder Participation for Environmental Management:
A Literature Review**

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Abstract

The complex and dynamic nature of environmental problems requires flexible and transparent decision-making that embraces a diversity of knowledges and values. For this reason, stakeholder participation in environmental decision-making has been increasingly sought and embedded into national and international policy. This review first traces the development of participatory approaches in different disciplinary and geographical contexts. It then draws together the typologies that have been developed to understand the basis for stakeholder participation. The first typologies distinguished between the degree of stakeholder engagement. Other typologies focus on: the nature rather than the degree of engagement; the theoretical basis for participation; and the objectives for which participation is used. Many benefits have been claimed for participation, and at the same time, disillusionment has grown amongst practitioners and stakeholders who have felt let down when these claims are not realised. Evidence for normative and pragmatic claims is reviewed, and limitations and drawbacks are evaluated. The review concludes by distilling eight features of best practice participation from the literature. These features emphasise the need to replace a “tool-kit” approach, which emphasises selecting the relevant tools for the job, with an approach that emphasises participation as a process. It is argued that to be successful, such a process needs to be underpinned by an appropriate philosophy, and to consider how to engage relevant stakeholders at the appropriate time and in a manner that will enable them to fairly and effectively shape environmental decisions.

Key words: Stakeholder participation, environmental management, knowledge, decision-making, best practice, typology.

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About the Author

Mark Reed's expertise in participatory conservation focuses on land degradation, sustainability indicators and participatory processes. Over the last 10 years, he has applied these skills in a range of interdisciplinary projects in the UK and Africa. His work has been published in peer-reviewed articles for international journals, book chapters, magazine articles and other publications, in addition to coverage by BBC Radio 4, the Guardian and southern Africa newspapers. Over the last 10 years, he has led research proposals that have secured over £1 million from organisations such as the European Commission, Global Environment Facility, the Royal Society, the Royal Geographical Society and the UK Government's Research Councils. Mark started working on people-plant interactions in Uganda in 1996, where he did research for his Undergraduate and Masters degrees. He modelled the carbon dynamics of land use change at the University of Aberdeen, before coming to Leeds in 2000, where he gained his PhD working on land degradation assessment with communities in the Kalahari, Botswana. The methodological framework from this research has been adapted for use in UK uplands and is being applied internationally through a 9 million euro EU-funded land degradation remediation project, working with communities in southern, northern and Sahelian Africa, southern Europe, China & S America.

1 Introduction

Environmental problems are typically complex, uncertain, multi-scale and affect multiple actors and agencies. This demands transparent decision-making that is flexible to changing circumstances, and embraces a diversity of knowledges and values. To achieve this, stakeholder participation is increasingly being sought and embedded into environmental decision-making processes, from local to international scales. Widespread acceptance and promotion of participation has partly been driven by increasing public scepticism about science, and ongoing policy trends that emphasise sustainable development and partnership working (Richards *et al.*, 2004). Participation in environmental decision-making is increasingly becoming regarded as a democratic right (and is enshrined as such in the United Nations Economic Commission for Europe's 1998 Aarhus Convention), and this right is increasingly being used by proliferating environmental interest and pressure groups. In addition to normative arguments such as this, many pragmatic benefits have been claimed for participation; by involving stakeholders, it is argued that the quality and durability of decisions is likely to be greater. However, such claims have rarely been tested, and there is growing disillusionment among environmental managers who have failed to see these claims realised. Others have sought to address and move beyond these critiques, learning from the mistakes of the participation panacea, to develop a more sensitive, post-participation approach.

This literature review aims to examine evidence for the claims that have been made for and against stakeholder participation and, on this basis, to identify suggestions for best practice participation. This is done in the context of a brief history of participatory approaches to environmental decision-making, and the typologies that have been developed to understand the basis for stakeholder participation. In this article, participation is defined as a process where individuals, groups and organisations choose to take an active role in making decisions that affect them (Wandersman, 1981; Wilcox, 2003; Rowe *et al.*, 2004). This definition focuses on stakeholder participation rather than broader public participation, if stakeholders are defined as those who are affected by or can affect a decision (after Freeman, 1984).

2 Histories and typologies of participation

Approaches to stakeholder participation have progressed through a series of recognisable phases: from awareness raising in the late 1960s (the anti-modernisation critique of the transfer of technology paradigm); incorporating local perspectives in data collection and planning in the 1970s; the development of techniques that recognised local knowledge and "put the last first" such as farming systems research and rapid and participatory rural appraisal in the 1980s; increasing use of participation as a norm in the sustainable development agenda of the 1990s; the subsequent critique of participation and disillusionment over its limitations and failings; and finally to a growing "post-participation" consensus over best practice, learning from the mistakes and successes of this long history. These developments have taken place in parallel geographical and disciplinary contexts. For example, lessons have emerged from: social activism (Freire, 1968); adult education (Kolb, 1984; McKernan, 1991); applied anthropology (e.g. IDS, 1979; Rhoades, 1982); complex systems (von Bertalanffy, 1968; Gunderson & Holling, 2000); natural resource management (e.g. Johnson *et al.*, 2003); and ecology (e.g. Mapinduzi *et al.*,

2003). While public consultation over environmental decision-making was growing in the industrialised world, a more action-orientated, site-specific approach was emerging in developing world contexts (Lawrence, 2006). Now the developed world is beginning to “learn from the south” and apply participatory methods and approaches emerging from developing world contexts (Dougill *et al.*, 2006; Stringer *et al.*, under review).

During the history of its development and in the different contexts where it has been applied, participation has become loaded with ideological, social, political and methodological meaning, giving rise to a wide range of interpretations (Lawrence, 2006). Rather than viewing these as competing with each other, typologies have been developed to understand the differences between these interpretations and their associated approaches and methods, and understand the different contexts in which they are most appropriate (Table 1).

Table 1: Typologies of participation

Basis of typology	Example
Typology based on different degrees of participation on a continuum. Numerous alternative terms suggested for different rungs of the ladder (e.g. Biggs, 1989; Pretty <i>et al.</i> , 1995; Farrington, 1998; Goetz and Gaventa, 2001; Lawrence, 2006).	Arnstein’s (1969) ladder of participation. Sometimes presented as a wheel of participation (Davidson, 1998).
Typology based on nature of participation according to the direction of communication flows	Rowe and Frewer (2000)
Typology based on theoretical basis, essentially distinguishing between normative and/or pragmatic participation.	Thomas, 1993; Beierle, 2002
Typology based on the objectives for which participation is used.	Okali <i>et al.</i> 1994; Michener 1998; Warner 1997; Lynam, 2007; Tippett 2007

The first typologies distinguished between the degree to which stakeholders were engaged. Arnstein’s (1969) “ladder of participation” described a continuum of increasing stakeholder involvement, from passive dissemination of information (which he called “manipulation”), to active engagement (“citizen control”). Numerous alternative terms have been suggested for the different rungs of this ladder (e.g. Pretty *et al.*, 1995; Goetz and Gaventa, 2001). One of the most widely used is Bigg’s (1989), who described the level of engagement as a relationship that can be “contractual”, “consultative”, “collaborative” and “collegiate”. Farrington (1998) simplified this to a distinction between participation that is “consultative”, “functional” (i.e. enhancing project implementation through local labour and knowledge), or “empowering”. Lawrence (2006) built on this, proposing “transformative” participation as an alternative top rung of the ladder, and emphasising the idea that empowerment should lead to the transformation of the communities who are involved. The hierarchical nature of the ladder metaphor implies that higher rungs should be preferred over lower rungs, and much of the literature makes this assumption explicitly (e.g. Arnstein, 1969; Johnson *et al.*, 2004). However, different levels of

engagement are likely to be appropriate in different contexts, depending on the objectives of the work and the capacity for stakeholders to influence outcomes (Richards *et al.*, 2004; Tippett *et al.*, 2007). For this reason, a “wheel of participation” has been suggested as an alternative metaphor that emphasises the legitimacy of different degrees of engagement (Davidson, 1998).

Rowe and Frewer (2000) focus on the nature rather than the degree of engagement, identifying different types of public engagement by the direction that communication flows between parties. According to this view, information dissemination to passive recipients constitutes “communication”, gathering information from participants is “consultation” and “participation” is conceptualised as two-way communication between participants and exercise sponsors where information is exchanged in some sort of dialogue or negotiation.

Other typologies focus on the theoretical basis, essentially distinguishing between participation that is normative and/or pragmatic. Normative participation focuses on process, suggesting that people have a democratic right to participate in environmental decision-making. Pragmatic arguments focus on participation as a means to an end, which can deliver higher quality decisions. The contrast between these two types of participation has been conceptualized in many different ways. For example Habermass’ (1987) “communicative action” theory suggests participation should be “fair”, representing the full range of relevant stakeholders and equalising power between participants, in addition to being “competent” (resulting in settled claims). This distinction has also been conceptualised as the need for “public acceptance” versus “decision quality”, or “political” versus “technical” participation (Thomas, 1993; Beierle, 2002).

Alternatively, there have been a number attempts to develop typologies on the basis of the objectives for which participation is used. For example, Okali *et al.* (1994) distinguished between “research-driven” versus “development-driven” participation. Similarly, Michener (1998) contrasted “planner-centred” participation that is focused on outcomes with “people-centred” participation, which builds capacity and empowers stakeholders to define and meet their own needs. Warner (1997) argued that neither of these categories adequately reflected the sort of sustainability objectives that participatory processes are commonly used to meet. Instead, he proposed a third category focused on building consensus (which he defined as “a condition in which all participants can live with the result” p417), which he deemed necessary to achieve sustainability objectives (see van de Kerkhof (2006) for a critique of this approach). Focusing instead on the operational objectives of participation, Lynam *et al.* (2007) distinguished between “diagnostic and informing”, “co-learning” or “co-management” methods, and Tippett *et al.* (2007) considered the differences between methods to: inform; design active engagement processes; consult; deliver implementation of management plans; or to monitor and learn from the effectiveness of participatory practice.

Each of these typologies offer an alternative basis for distinguishing between the numerous available methods and approaches for stakeholder participation, and provide a basis for selecting the methods that are likely to be most appropriate to the purpose of the work in a given context. Before considering how such methods can be

embedded into an appropriate process, some of the potential benefits, drawbacks and limitations of stakeholder participation will be reviewed next.

3 Benefits of participation: evidence for the claims?

The many claimed benefits of stakeholder participation have to an extent driven its widespread incorporation into national and international policy. At the same time, disillusionment has been growing amongst practitioners, stakeholders and the wider public, who feel let down when these claims are not realised. These claims can be broadly categorised under normative and pragmatic arguments for stakeholder engagement in environmental decision-making.

Normative claims focus on benefits for democratic society, citizenship and equity. For example, it is argued that stakeholder participation reduces the likelihood that those on the periphery of the decision-making context or society are marginalised. In this way, more relevant stakeholders can be included in decisions that affect them and active citizenship can be promoted, with benefits for wider society (Martin and Sherington, 1997). Stakeholder participation may increase public trust in decisions and civil society, if participatory processes are perceived to be transparent and consider conflicting claims and views (Richards *et al.*, 2004). Stakeholder participation, it is argued, can empower stakeholders through the co-generation of knowledge with researchers and increasing participants' capacity to use this knowledge (Greenwood *et al.*, 1993; Okali *et al.*, 1994; MacNaughten and Jacobs, 1997; Wallerstein, 1999). It is claimed that stakeholder participation may increase the likelihood that environmental decisions are perceived to be holistic and fair, accounting for a diversity of values and needs and recognising the complexity of human-environmental interactions (Richards *et al.*, 2004). It may also promote social learning (Blackstock, 2007). This is where stakeholders and the wider society in which they live, learn from each other through the development of new relationships, building on existing relationships and transforming adversarial relationships as individuals learn about each others' trustworthiness and learn to appreciate the legitimacy of each other's views (Forester, 1999; Pahl-Wostl and Hare 2004; Leeuwis *et al.*, 2002; Stringer *et al.*, 2006).

Pragmatic claims focus on the quality and durability of environmental decisions that are made through engagement with stakeholders. It is argued that participation enables interventions and technologies to be better adapted to local socio-cultural and environmental conditions. This may enhance their rate of adoption and diffusion among target groups, and their capacity to meet local needs and priorities (Martin and Sherington, 1997; Reed, 2007). Participation may make research more robust by providing higher quality information inputs (Hansen 1994; Reed *et al.*, 2006; Reed *et al.*, in press). By taking local interests and concerns into account at an early stage, it may be possible to inform project design with a variety of ideas and perspectives, and in this way increase the likelihood that local needs and priorities are successfully met (Dougill *et al.*, 2006). It is argued that participatory processes should lead to higher quality decisions, as they can be based on more complete information, anticipating and ameliorating unexpected negative outcomes before they occur (Beierle, 2002). By establishing common ground and trust between participants and learning to appreciate the legitimacy of each others' viewpoints, participatory processes have the capacity to transform adversarial relationships and find new

ways for participants to work together (Stringer *et al.*, 2006). This may lead to a sense of ownership over the process and outcomes. If this is shared by a broad coalition of stakeholders, long-term support and active implementation of decisions may be enhanced (Richards *et al.*, 2004). Depending on the nature of the initiative, this may significantly reduce implementation costs.

However, there is growing concern that stakeholder participation is not living up to many of the claims that are being made. Stakeholder participation does not take place in a power vacuum: the empowerment of previously marginalised groups may have unexpected and potentially negative interactions with existing power structures (Kothari, 2001). There are ways in which participation can reinforce existing privileges and group dynamics may discourage minority perspectives from being expressed (Nelson & Wright, 1995), creating “dysfunctional consensus” (Cooke, 2001: 19). Consultation fatigue may develop as stakeholders are increasingly asked to take part in participatory processes that are not always well run, and as they perceive that their involvement gains them little reward or capacity to influence decisions that affect them (Burton *et al.*, 2004; Cosgrove *et al.*, 2000; Duane, 1999; Handley *et al.*, 1998; Warburton, 2002; Wondolleck and Yaffee, 2000). This may be compounded by the existence of non-negotiable positions that limit the extent to which the process can empower participants to influence decisions. The resulting cynicism can lead to declining levels of engagement and put the credibility of participation at risk. This credibility has also been questioned on the basis that many stakeholders may not have sufficient expertise to meaningfully engage in what are often highly technical debates.

Despite the rhetoric and the concerns that have been expressed, there have been few attempts to investigate the validity of the many claims that have been made for stakeholder participation (Webler, 1999; Beierle, 2002; Brody, 2003; Blackstock, 2007). The few attempts that have been made have tended to focus on evaluating the process rather than the outcomes (e.g. Beierle, 1999; Renn *et al.*, 1995; Rowe & Frewer, 2000). This may be partly due to the challenge of selecting appropriate evaluation criteria and data collection methods. Blackstock (2007) argues that the evaluation of participatory processes should itself be participatory, with stakeholders selecting and applying the evaluation criteria. However, this is not straightforward. Webler and Tuler (2006) found strong differences of opinion between participants that they selected from ten case studies, about what constituted a “good” participatory process. Notwithstanding such differences, it may still be possible to develop evaluation criteria with stakeholders. For example, Chase *et al.* (2004) derived criteria from theory, which they prioritised with stakeholders in two case studies through questionnaires. Although there was a wide range of opinion, the criteria cited most frequently were: “using the best available scientific information, having a genuine influence on decisions, promoting communication and learning, and treating all citizens equally”.

More commonly, participation is evaluated in the absence of stakeholder engagement, on the basis of criteria derived from theory and the analysis of cases (Chase *et al.*, 2004). For example, Chess and Purcell (1999) evaluated the extent to which “process” and “outcome” goals were achieved through a range of participatory methods. They found that the extent to which these goals were met did not differ between the different methods (public meetings, workshops, or citizen advisory

committees). Instead success was influenced by the way that group dynamics were handled by facilitators (e.g. dealing with dominant individuals and placing participants in reactive positions), communication with participants (e.g. lack of information or publicising events and condescending attitudes towards participants), the clarity of goals that were set, and the quality of planning. Brody (2003) evaluated whether stakeholder participation had improved the quality of local plans for the long-term management of ecological systems on the basis of theoretically-derived criteria, and found that the presence of specific stakeholders significantly increased their quality. Koontz (2005) conducted a multiple-case analysis to evaluate the extent to which stakeholder participation influenced the recommendations of community-based task-forces developing local farm preservation policy in the United States. He only found a significant effect in counties where the citizens and the elected officials were highly concerned about the issues involved, and where participants were connected with strong social networks that focussed on the issues being discussed. Sultana and Abeyasekera (2007) analysed 36 cases of community fisheries management in Bangladesh with and without stakeholder participation during planning, and found statistical evidence that participation led to greater uptake of conservation measures and fewer conflicts between stakeholders. Beierle (2002) coded information from 239 published case studies of stakeholder involvement in environmental decision-making and found evidence that stakeholders improved the quality of decisions that were made in the majority of cases, adding new information, ideas, and analysis. Based on this analysis, Beierle (2002) concluded that more intensive stakeholder processes are more likely to yield higher quality decisions. Although only a few studies have evaluated a handful of the claims that have been made for stakeholder participation in environmental decision-making, the evidence that exists does appear to support the claims that have been evaluated.

Although these studies suggest that stakeholder participation may improve the quality of environmental decisions, they do so with one strong caveat: the quality of a decision is strongly dependant on the quality of the process that leads to it. Through a combination of quantitative evaluations like these, and insights from qualitative studies and case studies (which are far more abundant), best practice in stakeholder participation is now beginning to emerge, and is reviewed in the next section.

4 Best practice stakeholder participation

When individual practitioners and stakeholders are asked, much disagreement still exists over what constitutes best practice. For example, Webler *et al.* (2001, 2006) used Q methodology to identify four distinct views of best practice from those who had taken part in ten participatory processes, who differed over how to tackle issues of power and trust, and the role of strong leadership/direction and scientific information. However, such views are not mutually exclusive, and a review of the literature shows that a broad consensus over key features of best practice is emerging from “post-participation” disillusionment.

A theme running through this literature is the need replace the “tool-kit” approach to participation, which emphasises selecting the relevant tools for the job, with an approach that views participation as a process. Perhaps a more appropriate metaphor for this view of participation is a “service contract” (such as one might draw up for office cleaning or boiler maintenance). This view emphasises the people who

use the tool-kit in the context of a long-term relationship where the parties develop mutual trust and respect as they learn from each other to negotiate potential solutions. To be successful, this process needs to be underpinned by an appropriate philosophy, and consider how to engage the relevant stakeholders at the most appropriate time and in a manner that will enable them to fairly and effectively shape environmental decisions. The rest of this section reviews eight key features of best practice participation that have emerged from the literature.

1. Stakeholder participation needs to be underpinned by a philosophy that emphasises empowerment, equity, trust and learning

The “service contract” view of participation as a process emphasises the need for flexibility, adapting to different and changing circumstances. Given the wide choice of tools and process designs that are available, and the need to respond rapidly to dynamic contexts, a strong philosophical underpinning is necessary to guide the development of the process as it unfolds.

The first component of this philosophy that is emphasised in the literature is the need to empower participants through participation. This takes two forms: i) ensuring that participants have the power to really influence the decision (Fiorino, 1990; Laird, 1993; Chase *et al.*, 2004; Tippett *et al.*, 2007); and ii) ensuring that participants have the technical capability to engage effectively with the decision (Richards *et al.*, 2004). If a decision has already been made or cannot really be influenced by stakeholders, then participation is not appropriate. This situation is analogous to Rowe and Frewer’s (2000) one-way flow of information from decision-makers to stakeholders, the lower rungs of Arnstein’s (1969) ladder, or Lynam *et al.*’s (2007) “diagnostic and informing” mode of participation (section 2.2). It may be less obvious if stakeholders come to the table with non-negotiable positions, for example due to the statutory obligations of some organisations that prevent them from compromising with others on certain issues (Richards *et al.*, 2004). Such limitations need to be identified and flagged up at the start of any participatory process, which may need to be bounded accordingly, to avoid frustration and potential conflict.

It is not enough simply to provide stakeholders with the opportunity to participate in decision-making though; they must actually be able to participate (Weber and Christopherson, 2002). When decisions are highly technical, this may involve educating participants, developing the knowledge and confidence that is necessary for them to meaningfully engage in the process. For example, in Citizen’s Juries (Crosby, 2003), stakeholders listen to “expert witnesses” present different arguments before making their decision. Alternatively, permaculture training provides land managers with environmental management skills and provides support and feedback to those designing their own gardens, so that they can share their knowledge with neighbours in a self-propagating system.

Power inequalities within groups represent an equally important barrier to meaningful engagement. It is necessary to consider how inequalities in age, gender and background can be overcome to enable stakeholders to participate on a level playing field. For example, Prell *et al.* (2007), worked with a highly heterogeneous group consisting of stakeholders with educational backgrounds ranging from PhDs to no

formal education. To cope with this, they replaced the use of post-it notes and flip charts in workshops, with site visits where the participants (who were all used to working outside), could use the landscape as their visual aid. By working intensively with a small group, building in opportunities to socialize with each other, this process was also designed to enhance trust and enhance relationships between participants. By explicitly dealing with issues of power and trust in this way, it may be possible to give all stakeholders a voice in the resulting dialogue. This increases the likelihood that the participatory process is perceived to be both fair and valid by those inside and outside the decision-making process (Tippett *et al.*, 2007). Implicit in this discussion is a sense of mutual respect between stakeholders and those facilitating the participatory process. In particular, the time that stakeholders voluntarily invest in the process needs to be highly valued.

Finally, the literature suggests that any philosophy of participation should emphasise iterative and two-way learning between participants (Chase *et al.*, 2004; Johnson *et al.*, 2004; Lynam *et al.*, 2007). This includes learning between participants who may have very different knowledges and perspectives, and between stakeholders and researchers. The adaptive management literature emphasizes the need for iterative learning in long-term participatory processes, where participants experimentally monitor the outcomes of their decisions and adapt them accordingly (Gunderson and Holling, 2002). Although this may take many years, such iterative learning can be achieved over much shorter time-scales by using computational models to explore the likely socio-ecological consequences of decisions, which can be adapted through successive dialogue with stakeholders and model runs (Prell *et al.*, 2007).

2. Where relevant, stakeholder participation should be considered as early as possible and throughout the process

When implementing a participatory process, stakeholder participation should be considered right from the outset, from concept development and planning, through implementation, to monitoring and evaluation of outcomes. Engagement with stakeholders as early as possible in decision-making has been frequently cited as essential if participatory processes are to lead to high quality and durable decisions (e.g. Mazmanian and Nienaber, 1979; Stewart *et al.*, 1984; Blahna and Yonts-Shepard, 1989; Gariepy, 1991; Beltson, 1995; Chess and Purcell, 1999; Reed *et al.*, 2006). Typically, stakeholders only get involved in decision-making at the implementation phase of the project cycle, and not in earlier project identification and preparation phases. Increasingly they may also be involved in monitoring and evaluating the outcomes of the decision-making process (Estrella and Gaventa, 2000). However, unless flexibility can be built into the project design, this can mean that stakeholders are invited to get involved in a project that is at variance with their own needs and priorities. This may make it a challenge to motivate stakeholders to engage with the decision-making process, and those who are engaged may be placed in a reactive position, where they are asked to respond to proposals that they perceive to have already have been finalised (Chess and Purcell, 1999). Prell *et al.* (2007) present one of the few documented examples of stakeholder engagement right from the development of the initial concept. This was made possible by seed-corn funding from the Rural Economy and Land Use programme where stakeholders developed a project proposal with researchers in a Scoping Study. A review of the programme's seed-corn funding showed that it played a crucial role in catalysing

interdisciplinary collaborations to tackle complex problems, and recommended wider use of such funding mechanisms (Meagher and Lyall, 2007). Reed *et al.* (2006, in press) showed how stakeholders could be actively engaged in sampling design, data collection and analysis, in addition to more traditional roles.

3. Relevant stakeholders need to be represented systematically

Stakeholder analysis is increasingly being used to systematically represent those relevant to environmental decision-making processes (Grimble and Wellard, 1997; Reed *et al.*, in prep.). Stakeholder analysis is a process that: i) defines aspects of a social and natural system affected by a decision or action, ii) identifies individuals and groups who are affected by or can affect those parts of the system (this may include non-human and non-living entities and future generations), and; iii) prioritises these individuals and groups for involvement in the decision-making process (Reed *et al.*, in prep.). This definition draws together ideas that have evolved in parallel from business management, natural resource management and development studies.

A wide variety of tools and approaches have been used for stakeholder analysis in these disciplines and in different contexts. These can be categorised as methods used for: i) identifying stakeholders; ii) differentiating between and categorising stakeholders; and iii) investigating relationships between stakeholders (Reed *et al.*, in prep.). Whilst some methods may be used for more than one purpose (for example, Social Network Analysis is primarily used to investigate relationships between stakeholders, but can also be used to categorise them) most are generally used for one of the three purposes identified above. Due to the time involved, practitioners rarely use all three types of methods, focussing instead on identifying and sometimes categorising stakeholders.

Where there is considerable documentary evidence or where analysts have an intimate knowledge of the individuals and groups with a stake in the system under investigation (e.g. an organisation, intervention, or issue), the stakeholder analysis can be conducted without the active participation of the stakeholders themselves (Reed *et al.*, in prep.). However, participation may be necessary if it is unclear which issues are most pertinent to the investigation, or if there is incomplete knowledge on the population from which the stakeholders could be drawn. The level of participation in stakeholder analysis can also vary considerably. This may consist of passive consultation, where stakeholders simply provide information for the analysis. It may extend to active engagement, where there is a two-way exchange of information between stakeholders and analysts as equal partners, in a process which is designed to allow stakeholders to influence who is included in the analysis.

Much of the stakeholder analysis literature has presumed that stakeholders are self-evident and self-construed, and has focused on categorising existing stakeholders to understand their interests and relationships (e.g. Mitchell *et al.*, 1997; Eden and Ackermann, 1998; Frooman, 1999). However, before this can be done, it is necessary to identify who holds a stake in the system under investigation (Reed *et al.*, in prep.). This in itself necessitates a clear understanding of the research question, so that the boundaries of the social and ecological system can be established. From this clarification, a number of methods can then be used to identify

the relevant stakeholders. Identifying stakeholders is usually an iterative process, where stakeholders are added as the analysis continues, for example, using expert opinion, focus groups, semi-structured interviews, snowball sampling, or a combination of these methods. If the system and its boundaries are clearly defined, then stakeholders can be relatively easily identified. However, there is a risk that some stakeholders are omitted and as a consequence not all relevant stakeholders in the system may be identified (Clarkson, 1995). On the other hand, it is often not possible to include all stakeholders and it is necessary to draw a line at some point, based on pre-determined and well-defined decision criteria (Clarke and Clegg, 1998).

Once the stakeholders have been identified, there are also a range of methods that have been developed to characterise and classify them. These tend to follow two broad approaches: i) top-down “analytical categorisations” where stakeholders are classified by researchers based on their observations of the system in question and ‘embedded in some theoretical perspective on how a system functions’ (Hare and Pahl-Wostl, 2002: 50) and; ii) bottom-up “reconstructive methods” which allow the categorizations and parameters in a stakeholder analysis to be defined by the stakeholders themselves, so that the stakeholder analysis better reflects the perceptions of the stakeholders themselves (Dryzeck and Berejikian 1993; Hare and Pahl-Wostl 2002). For details, see Reed *et al.* (in prep.). Examples of categorisation tools include interest-influence matrices, where stakeholders are placed in a matrix on the basis of the extent to which they are interested in or can influence the issue under investigation. Venn diagrams may also be used with stakeholders to explore the extent to which the characteristics of different groups overlap (Reed *et al.*, in prep.).

Finally, there are a collection of methods that have been developed to investigate the relationships that exist between stakeholders (as individuals and groups) in the context of a particular system. There are two principal methods that have been used to analyse stakeholder relationships: i) Social Network Analysis provides insights into patterns of communication, trust and influence between actors in social networks, and; ii) Knowledge Mapping analyses the flows of information between these actors (Reed *et al.*, in prep.).

4. Clear objectives for the participatory process need to be agreed among stakeholders at the outset

In order to design an appropriate process using relevant tools, it is essential to clearly articulate the goals towards which the group will be working: “as with any analysis, well-formulated questions are more likely to generate robust answers” (Lynam *et al.*, 2007; online). This is closely linked to stakeholder analysis and may take place as part of such an analysis, where system boundaries and issues are identified alongside those who hold a stake in what happens to the system under investigation (Reed *et al.*, in prep.). This may require negotiation, and different stakeholders may have irreconcilable objectives (Chess and Purcell, 1999). However, if the goals are developed through dialogue (making trade-offs where necessary) between participants, they are more likely to take ownership of the process, partnership building will be more likely, and the outcomes are more likely to be more relevant to stakeholder needs and priorities, motivating their ongoing active engagement (Johnson *et al.*, 2004; Lynam *et al.*, 2007). This assumes that such engagement is in

fact necessary. It is only by defining clear objectives that it will be possible to determine the appropriate level of engagement, who should be engaged, and how best to engage them.

5. Methods should be selected and tailored to the decision-making context, considering the objectives, type of participants and appropriate level of engagement

Participatory methods can only be chosen once the objectives of the process have been clearly articulated, a level of engagement has been identified that is appropriate to those objectives, and relevant stakeholders have been selected for inclusion in the process.

The level of engagement is a major factor determining the methods that are likely to be most relevant. Most typologies of participation suggest methods that are appropriate to different levels of engagement. For example, Arstein (1969), Biggs (1989) and Pretty (1995) suggest methods for the different rungs of their ladder of participation. Similarly, Richards *et al.* (2004) suggest methods appropriate to the different levels of engagement on a wheel of participation, to emphasise the relevance of different levels for different purposes and contexts. Rowe and Frewer (2000) identify and review a wide range of methods that can be used to communicate (e.g. information dissemination via leaflets or the mass media, hotlines and public meetings), consult (e.g. consultation documents, opinion polls and referendums, focus groups and surveys) or participate (e.g. citizen's juries, consensus conferences, task-forces and public meetings with voting) with stakeholders. Tippet (2007) provides a useful review of participatory process designs, and a wide range of tools and methods have been reviewed elsewhere, for example: Mikkelsen (1995); Pretty (1995b); Rietbergen-McCracken & Narayan (1996); Davies (1997); Rennie & Singh (1997); New Economics Foundation (1998); Shah (1999); Galpin *et al.* (2000); Wates (2000); OECD (2001); Chambers (2002); DFID (2002); European Commission (2002); Jayakaran (2003); Home Office (2004); International Association for Public Participation (2004); Scottish Parliament (2004); Mayoux (2005); Involve (2005); and Tippet (2007).

Methods must also be adapted to the decision-making context, including socio-cultural and environmental factors. For example, methods that require participants to read or write should be avoided in groups that might include illiterate participants. The amount of time that participants are likely to give up varies between cultures, and limited time may constrain the choice of methods. Equally, the resources available may also limit this choice. Depending on the power dynamics of the group, methods may need to be employed that equalise power between participants. Where it is necessary to work with participants outdoors, methods may have to be adapted, for example drawing in the sand instead of using flip-chart paper. For example, a cultural taboo prevents women from speaking when men are present in village Kgotlas (a fenced area usually under a tree, equivalent in function to a village hall) in Botswana, so Reed *et al.* (in press) held separate focus groups for men and women. Participatory mapping was conducted with participants drawing in the sand before maps were transferred to paper and checked by vehicle with a Global Positioning System.

Finally, methods must be adapted to the relevant stage in the process and to changing contexts (Richards *et al.*, 2004). For example, different methods will be appropriate for encouraging engagement in the process, compared to evaluating the outcome. Being able and prepared to use a range of tools can enable the facilitator to adapt to changing circumstances such as the last minute discovery that a participant has a disability that precludes participation in a certain activity, or a change in an objective that has become irrelevant due to changes external to the process. For example, Dougill *et al.* (2006) had to replace multi-criteria evaluation with structured discussion when it became apparent that some of the participants were illiterate.

6. Highly skilled facilitation is essential

The outcome of any participatory process is far more sensitive to the manner in which it is conducted than the tools that are used (Chess and Purcell, 1999; Richards *et al.*, 2004). Different facilitators can use the same tools with radically different outcomes, depending on their skill level. Such skills include technical expertise in the use of different tools. However, it is sometimes the most seemingly simple of methods, such as informal group discussion, which require the greatest expertise. A successful facilitator needs to be perceived as impartial, open to multiple perspectives and approachable. They need to be capable of maintaining positive group dynamics, handling dominating or offensive individuals, encourage participants to question assumptions and re-evaluate entrenched positions, and get the most out of reticent individuals. Such skills are difficult to learn and tend to be developed through years of experience, intuition and empathy (Richards *et al.*, 2004).

Various techniques have been developed to aid facilitation, including the development of ground rules that groups agree to follow, meticulous planning, psychological approaches to deal with difficult individuals and group dynamics, and being familiar with a wide range of alternative tools that can be adapted to the circumstances (Chess and Purcell, 1999; Richards *et al.*, 2004). By reflecting on feedback from participants about the facilitation of participatory processes, it is possible to refine personal practice over time, but there is no substitute for experience.

7. Local and scientific knowledges should be integrated

The need for scientific information and analysis to inform stakeholder deliberation has been identified by many authors as an essential ingredient in any participatory process (e.g. Chess *et al.*, 1998, 1999; Johnson *et al.*, 2004; Chase *et al.*, 2004; Webler *et al.*, 2006; Tippett *et al.*, 2007). In highly technical decision-making contexts this may serve an educational purpose (point 1 above). In combination with local knowledge, scientific knowledge can contribute to a more comprehensive understanding of complex and dynamic natural systems and processes. By triangulating different local and scientific knowledge sources, it may be possible to investigate uncertainties and assumptions and develop a more rigorous understanding as well (Johnson *et al.*, 2004). Following from this, it is argued that decisions based on such knowledge are likely to be more robust (Hansen 1994; Reed *et al.*, 2006; Reed *et al.*, in press).

Participatory approaches were developed in part, as a response to the top-down, science-led transfer of technology paradigm (section 2.1). By tapping into local knowledge, it was argued, more complete information could lead to more robust solutions to environmental problems. However, just as the participatory paradigm questioned the validity of technical approaches, so local knowledge cannot be unquestioningly accepted. Instead, there is a growing body of literature suggesting that a combination of local and scientific knowledge may empower local communities to monitor and manage environmental change easily and accurately (e.g. Thomas and Twyman, 2004; Stringer and Reed, 2006; Reed *et al.*, 2007; Ingram, 2008; Reed *et al.*, in press). Scientific knowledge is typically understood to be explicit, systematised, decontextualised and hence widely transferable (Norgaard, 1984; Ingram, 2008). Lundvall and Johnson (1994) refer to this as “know-why”, since scientific knowledge partly attempts to understand the underlying principles and theory behind observable phenomena. They contrast this with the “know-how” of local knowledge (“practical knowledge” according to Thrift, 1985), that is primarily tacit, implicit, informal, context dependant, resulting from the collective experience of generations of observation and practice (Ingram, 2008). Stringer and Reed (2006) argue that by hybridising these knowledges (Forsyth, 1996; Nygren, 1999) it may be possible for researchers and local communities, with their different understandings, to interact in order to produce more relevant and effective environmental policy and practice.

On the other hand, it has been suggested that local knowledge may be exaggerated or distorted, and irrelevant to scientific nature of much modern environmental management (Molnar *et al.*, 1992; Richards, 1993; Morgan and Murdoch, 2000). On this basis, concerns have been expressed that integrating scientific and local knowledge bases will inevitably involve a trade-off between meaningful participation and scientific rigour (Abbot and Guijt, 1997). Reed *et al.* (in press) evaluated this hypothesis by empirically testing indicators of land degradation elicited from pastoralists in the Kalahari, Botswana. They found considerable overlap between scientific literature and local knowledge, and the results of empirical testing suggested that such a trade-off was by no means inevitable. Many of the indicators traditionally used by researchers could not be used by non-specialists, and it was not possible to find empirical evidence to support all indicators suggested by pastoralists. However, there were a considerable number of indicators representing a wide range of system components that had a clear empirical basis and that could be used effectively by non-specialists to monitor and respond to environmental change.

In Western societies, Ingram (2008) argues that the overlap between these knowledge bases may be due to the direct assimilation of scientific knowledge by practitioners, often through extension services, that is necessary to incorporate advanced technologies into their practice. Indeed, there is often a fine line between ongoing experimentation by farmers designed to enhance their own practice, and scientific experimentation (Wilson, 1997; Harrison *et al.*, 1998; Tsouvalis *et al.*, 2000). This has led some to suggest that not only are these knowledge bases fundamentally compatible (Romig *et al.*, 1995; Walter *et al.*, 1997); but that all knowledge comprises a heterogeneous blend of tacit and implicit knowledges from different sources that is impossible to disentangle (Long, 1992; Murdoch and Clark, 1994; Clark and Murdoch, 1997).

8. Participation needs to be institutionalised

Finally, the long-term success of participatory processes may depend on institutionally embedding stakeholder participation. Although participation is increasingly becoming embedded in policy, the requirements of participatory processes are at variance with many of the institutional structures of the organisations charged with implementing these policies. Many of the limitations experienced in participatory processes have their roots in the organisational cultures of those who sponsor or participate in them. For example, although non-negotiable positions are often the result of regulatory constraints, they may simply be the result of pre-determined positions decided at higher levels within the organisation prior to participation in the process, that representatives do not feel able to negotiate. Decision-makers may feel uncomfortable committing themselves to implement and resource the as-yet unknown outcome of a participatory process. In many cases, to do so would represent a radical shift in the organisational culture of government agencies and other institutions. Richards *et al.* (2004: 18) argue that this requires significant and urgent institutional reform: “if participation is a democratic right, not just a normative goal, then participation must be institutionalised”.

5 Conclusion

Although few of the claims that are made for stakeholder participation have been tested, there is evidence that it can enhance the quality of environmental decisions, possibly due to more comprehensive information inputs. However, the quality of decisions made through stakeholder participation is strongly dependant on the nature of the process leading to them. Deficiencies in this process are most commonly blamed for the failures that have led to disillusionment in stakeholder participation. Often this has arisen from a focus on the tools of participation, rather than the process within which those tools are used. However, by focussing on participation as a process, this review has identified a number of best practice features from the literature. A range of typologies have been developed to understand the basis for stakeholder participation and can be used to select and tailor methods to the decision-making context, considering the objectives, type of participants and appropriate level of engagement. It is argued that stakeholder participation needs to be underpinned by a philosophy that emphasises empowerment, equity, trust and learning. Where relevant, participation should be considered as early as possible and throughout the process, representing relevant stakeholders systematically. The process needs to have clear objectives from the outset, and should not overlook the need for highly skilled facilitation. Local and scientific knowledges can be integrated to provide a more comprehensive understanding of complex and dynamic natural systems and processes. Such knowledge can also be used to evaluate the appropriateness of potential technical and local solutions to environmental problems. Finally, it has argued that to overcome many of its limitations, stakeholder participation must be institutionalised, creating organisational cultures that can facilitate processes where goals are negotiated and outcomes are necessarily uncertain. In this light, participatory processes may seem very risky, but there is growing evidence that if well designed, these perceived risks may be well worth taking.

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