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Incorporating Principles of
Sustainable Development within the
Design and Delivery of Major
Projects: An international study with
particular reference to Mega Urban
Transport Projects
for
the Institution of Civil Engineers
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The Perspective of the
Environmental Planner

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Introduction

The role of planners is primarily framed by the statutory planning system which has two main functions: firstly, it provides for the preparation of development plans, policies and strategies; and, secondly, it sets the basis for the regulation of development proposals. The UK planning system is determined by national government priorities as set out in legislation, for example, the Planning and Compulsory Purchase Act, 2004, which has recently reformed the nature of development planning and development control. But national policy also has to have regard to policy at the EU level, such as that set out in EU Directives; as discussed below, the Environmental Impact Assessment, Directive 85/337/EEC and the Strategic Impact Assessment, Directive 2001/42/EC have had a particular impact.

However, the practice of planning has to operate within societal expectations. There are two aspects of these expectations that have particular impact on planning practice. First, the planning system has evolved as a way to evaluate the costs and benefits of urban development and to find a balance between social, economic, and environmental factors in plan making and in decision making on specific projects. Second, the planning system provides an importance space for public participation and stakeholder involvement on urban change. This can take the form of conventional consultation and participation exercises but increasingly there has been innovative in this area, resulting in more deliberative approaches of the kind reviewed below.

Within this context, this paper provides a summary of the theory and practice of the assessment of the environmental and social impacts of major projects from the viewpoint of planning practice and, in particular, environmental planning practice.

ENVIRONMENTAL IMPACT ASSESSMENT

The International Association for Impact Assessment (1999) defines an environmental impact assessment (EIA) as "the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made". It is a means of identifying the impact, whether positive or negative, a proposed project may have on the natural environment. In the UK the need for an EIA is derived from the European Union Directive 85/337/EEC on the assessment of certain public and private projects on the environment, introduced in 1985. It has been stated that the UK only has a formal EIA system due to its membership of the EU, nevertheless despite the limited support for EIA, Directive 85/337/EEC was incorporated into UK Legislation in 1988 (Weston, 2002). The EU members states were given considerable discretion in the Directive's detailed transposition into their national legislation, provided its basic principles and procedural requirements were satisfied (Lee, 1995). The EIA applies mainly to certain major developments for which planning approval is required from local authorities under the Town and Country Planning Act, 1999 No.293 referred to as the Regulations. The EU Directive states which projects require EIA in a

scheduling system, which means not all development proposals, will require an EIA, in fact, less than 0.1% of planning applications are subject to EIA completion (Weston, 2002). Mega Urban Transport Projects (MUTPs) are defined in the Directive as Schedule 1 developments for which an EIA is mandatory.

The EIA process can be represented as a series of iterative stages (see fig. 1) and although they are outlined here in a linear fashion, EIA should be a cyclical activity, with feedback from later stages to earlier ones (Glasson *et al* 1999). When examining the EIA process it is useful to divide the process into two stages based around the principal consent decision for a development proposal. The pre-decision stage incorporates the early stages of an EIA process prior to proposal implementation (i.e. screening, scoping, impact prediction, and decision) (Morrison-Saunders and Arts, 2004). The post decision stage, assuming consent has been granted, is the follow-up stage and is concerned with the various stages of the project life cycle (i.e. final design, construction, operation, and decommissioning, project and environmental management) (Morrison-Saunders and Arts, 2004). In the UK, however, post-auditing activities are not widespread and this limits the cyclical nature of the process (Dipper *et al,* 1998).

There is increasing evidence to suggest that there has been a degree of change in EIA culture and that, procedurally, an EIA is much stronger today than when it was first implemented (Weston, 2002). This can be partly attributed to the EU Directive amendments in 1997 and the UK regulatory amendments in 1999 and also to a shift in government position from hostility to substantial support for research and best practice guidance (Glasson, 1999).

The EIA is a process with several important purposes, the first and most important of which is to aid decision-making. It was first established as a response to increasing concerns regarding the environmental effects of major development projects (Institute of Environmental Management and Assessment (IEMA) 2004). The objective of EIA is to provide decision-makers with a focused evaluation of the likely environmental consequences of sanctioning a proposed development action, before a decision is taken and at a time when it can actually affect the outcome (Glasson *et al,* 1999). Through the EIA a more balanced decision-making process should emerge giving environmental factors consideration and weight alongside other acts such as cost. It is not a substitute for decision-making but it should help clarify some of the trade offs associated with the proposed development and lead to a more rational and structured decision-making process (Glasson *et al,* 1999).

2

Figure 1. The EIA Process (adapted from Glasson *et al* 1999)
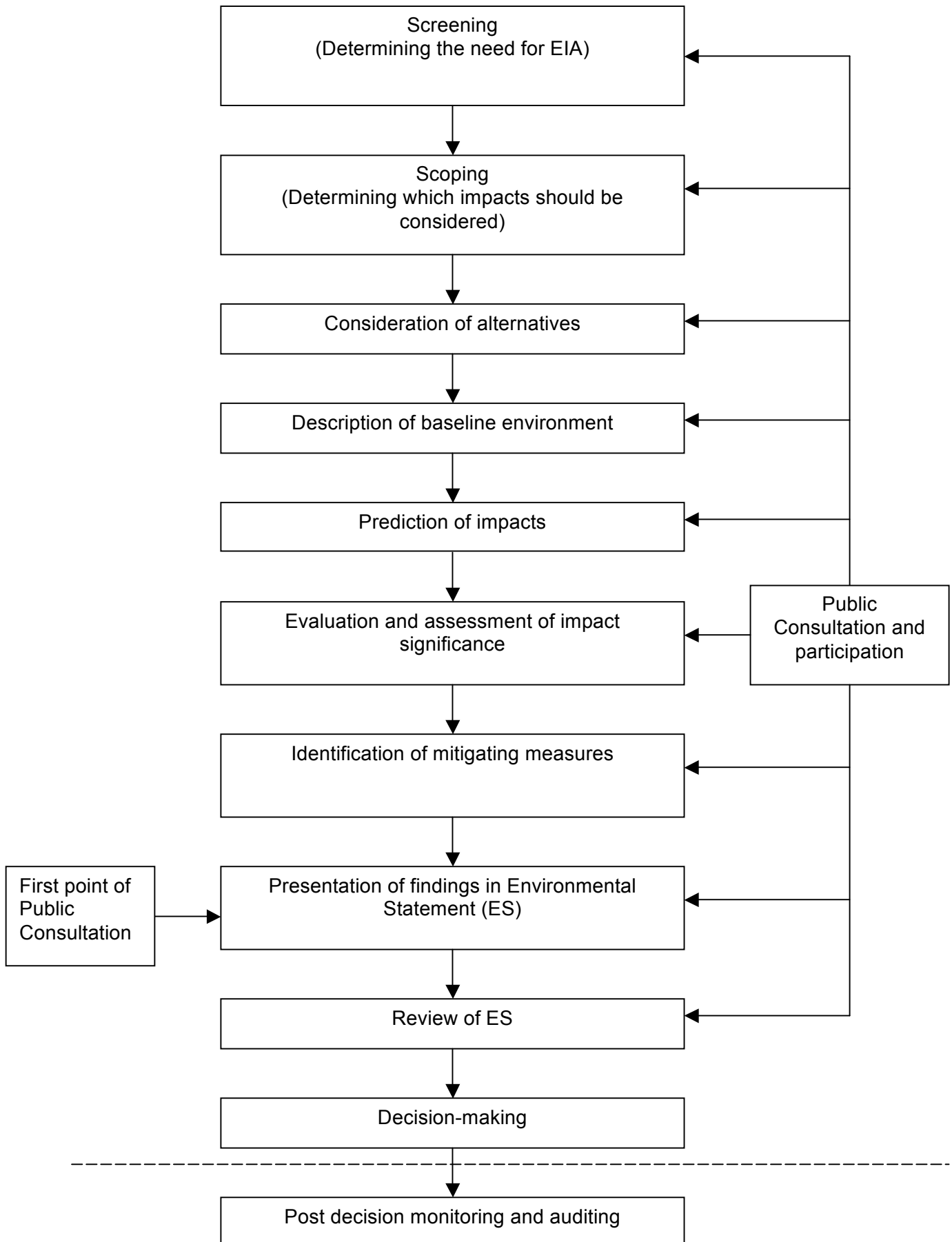
The second purpose of the EIA is to aid the developer. If the process is fully integrated into the project design cycle, it can enable developers to identify to improved relations between the developer, the local authority and the local communities and therefore lead to a smoother planning permission process (Glasson *et al*, 1999).

In the longer term the ultimate purpose of the EIA is to help achieve sustainable development. In theory the EIA helps developers identify, avoid and/or mitigate adverse impacts at the design stage and in some cases the development might be prevented (Glasson *et al,* 1999), all of which can be seen as a move towards achieving more sustainable development. In addition, the EIA has also been described as 'a powerful tool that has been remarkably successful in allowing for the consideration of social, economic and environmental effects in review of major development projects' (Morrison-Saunders and Arts, 2004). However to achieve overall sustainable outcomes the consequences of decisions taken must also be investigated, communicated and acted upon as necessary (Morrison-Saunders and Arts, 2004).

While it is generally agreed that EIAs have led to improvements in the environmental management of development activities, there is significant amount of literature that identifies numerous weaknesses in its practice. The scoping stage, arguably the most important stage of the process (Weston, 2000) is a poorly understood and researched component (Sadler, 1996). There is a lack of sufficient consideration of alternative options, cumulative impacts, and the monitoring and auditing of projects. The range of data identified and gathered is heavily bio-physical in focus where in reality development decisions involve tradeoffs between bio-physical and socioeconomic impacts (Glasson, 1999). Research has also shown that public consultation is sporadic and limited and despite the fact that it is supposed to occur at every stage of the process, in most UK cases, it actually only happens when the findings outlined in the ES are presented (see fig1.). All these have a significant impact to the quality of an EIA, although it is accepted that without the EC Directive it is unlikely that the majority of countries and in particular the UK, would have made as many advances as they have in the consideration and analysis of environmental factors in mega projects.

The scoping stage involves the interpretation and evaluation of the concept of *'significant effects'* involved in any given project, as well as initiates early contact between the developer and competent authority. There is a tight time frame for this process and the emphasis is on the *'significant'* effects not on all effects, as other issues may be of little concern for that particular development. Time-frame constraints are a serious issue: the risk of making an inappropriate decision about a significant impact is increased in these circumstances. "In contrast to the idealised notion of EIA as a rational, objective, systematic and value free process, in practice the interpretation of the significance of environmental effects is a highly contentious process that occupies 'a fluid boundary between science and politics' (Pritchard, 1993)" (Wood *et al*, 2006). This means that the availability of information and the dissemination of it may influence the nature and outcome of the process and

some stakeholders are likely to have more power and influence in the process than others (Wood *et al,* 2006). In the UK, the developer is essentially responsible for the scoping stage of the EIA, with many seeking the optional advice available to them from the LPAs. This raises a number of obvious concerns regarding the 'degree of openness or closure of the process; about power, control and access to information; about different values and perspectives of the participants' (Wood *et al,* 2006). In Canada and the Netherlands there is a legal requirement for a formal review of an ES which would go some way to mitigate these concerns. In the UK there is no such legal requirement (Gray and Edwards-Jones, 1999).

There are two levels of data that need to be considered as part of the scoping exercise; the baseline data, which provides information on the existing conditions, or standards against which the effects of the proposed development may be judged, and the range of data that needs to be compiled and included in the ES. Typically the assessment of both of these levels of data tends to be focused on bio-physical aspects and often fails to take into consideration the socio-economic characteristics of a development project. Some countries have adopted the practice of developing a social impact assessment (SIA) to complement the EIA, such as Canada and Australia, but in Europe the profile is lower and such impacts tend to be less well considered in the UK (Glasson, 1999).

Of the data gathered the general preference is also for quantitative over qualitative analysis of data. While this preference varies, for example consultants and statutory consultees in the UK are more likely to recognise the importance of what may be considered more complex scoping issues (e.g. temporary impacts, uncertainty, impact-interrelationships and EIA methods) than LPAs (Wood *et al,* 2006), professional judgement is still the predominant scoping method (Wood *et al,* 2006).This of course continues to raise questions of subjectivity, value assessments and stakeholder bias and in so having this, 'there is little benefit in implementing a comprehensive system of environmental assessment if no check is made on the validity and impartiality of the data presented to the decision makers – the best legislative system will provide no level of environmental protection if the information on which decisions are based is partial, flawed or biased' (Gray and Edwards-Jones, 1999).

The consideration of cumulative effects is even more limited. Recent research has shown that there is a lack of early identification of potential cumulative problems in EIAs, and that scoping exercises often if they address cumulative impacts at all, do so in a very limited way (Wood *et al,* 2006). "Impacts associated with individual projects can be minor, but collectively the impacts of multiple projects can impose a significant impact on the environment in what Odum (1982) refers to as the 'tyranny of small decisions'" (Glasson, 1999). Research, however, has also shown that it is an area that is beginning to be identified by practitioners as important and so it is hoped there will be improvement at this exercise in the future.

One of the most important aspects when EIAs were being proposed was the fact that through this exercise developers would be required to consider alternative options. As noted 31 years ago by the US Council on

Environmental Quality (CEQ) (1978), the discussion of alternatives is 'the heart of the environmental impact statement' (Glasson, 1999). There are good reasons for this: an in depth discussion of alternatives ensures that the developer has considered other approaches and of ways of mitigating environmental damage. 'A consideration of alternatives also encourages analysts to focus on the differences between real choices' (Glasson, 1999). In the UK the consideration of alternatives is given less consideration by LPAs than might have been anticipated, in fact 44% of LPAs regarded the consideration of alternatives as *'of little'* or *'no importance'* in formulating the scoping opinion (Wood *et al,* 2006).

One of the most intermittent aspects of the EIA process among countries is the level of public consultation. While figure 1 shows that public consultation should happen at every stage of the process this varies significantly. 'In Belgium, Denmark, Finland, Netherlands, Spain and Sweden, consultation with the public is a legally required part of the process. In comparison, in Austria, Germany, Ireland and the UK, when forming a scoping opinion it is up the competent authority to decide whether or not the public should be consulted on the scope' (Wood *et al,* 2006). The concern here is that the scoping exercise may lack the benefit of local knowledge of the environment and not offer community members an opportunity to address their concerns at the influential stage. Effective and continual public consultation is essential not only as a way of addressing concerns but also to ensure the project 'carries more legitimacy, and less hostility, if potentially affected parties can influence the decision making process. (Chaplin & Deneau, 1978; Susskind & Cruikshank, 1987)' (Shepherd and Bowler, 1997). As well as public consultation occurring too late in the EIA process, another weakness is with regard to the fact that the consultation ends prior to project implementation when, 'project planning and implementation are not discreet events; they continue to evolve over time, as might also public values (Norton, 1995)' (Shepherd and Bowler, 1997).

There are a number of recommendations put forward to improve public consultation in the EIA process. Public consultation should ideally begin before project planning and decision making have progressed too far to be influenced (Shepherd and Bowler, 1997). Public involvement while possibly increasing situations of conflict would, through improvements in the resolution process "lead to a mutually acceptable outcome and a productive long term relationship between the project proponent and the public" (Shepherd and Bowler, 1997).

Finally, research has also shown that project follow up remains a weakness in EIA, in practice only performed in a minority of cases and that a lack of follow up is a major constraint on the advancement of overall EIA practice (Dipper *et al,* 1998). Follow up has been defined as 'monitoring and auditing of the impacts of a project or plan (that has been subject to an EIA) for management of, and communication about, the environmental performance of the project or plan' (Morrison-Saunders and Arts, 2004). "There is a danger of a short-sighted 'build it and forget it' approach (Culhane, 1993: Frost, 1997)" (Glasson, 1999). The EIA should be more than a means of gaining planning permission for mega projects; it should a means to obtain good environmental

management over the life of the project (Glasson, 1999). Mechanisms for the dissemination of results would be vital in ensuring successful measures are implemented in future projects and less successful ones improved upon or abandoned. The results of UK research suggest that the use of monitoring and auditing should be extended in the UK, and the majority of consultants believed it should be made a mandatory stage of the EIA process.

It is difficult to assess exactly what kind of measures can or should be taken to address these issues. Many stress that value judgements in the EIA process are inevitable, while overly technical approaches become too expensive and time consuming. It appears that while the problems are recognised, there is little agreement on what to do about them. The range of practices varies not only from country to country, but between different LPAs within the UK. Lack of experience at LPA level is cited a major contributor to the variable level of quality. Yet at the same time, the existing level of knowledge among planning authorities and statutory consultees is low, and a confusing range of practices is being undertaken under the name of scoping' (Snell and Cowell, 2006). Concerns too for efficiency, provide strong arguments against extending public consultation in scoping; arguments with which the LPAs currently appear to concur. Research has also shown that the aims of the scoping process, 'the view that open, early discussion helps to generate better information, foster consensus and speed up the decision-making process' is a fallacy and 'that many practitioners evidently not believe it, and there is little impetus — under the current institutional arrangements for EIA — for them to change their view' (Snell and Cowell, 2006).

Strategic Environmental Assessment

Sadler and Verheem (1996) define Strategic Environmental Assessment (SEA) as "a systematic process for evaluating the environmental consequences of proposed policy, plan or programme (PPP) initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations". An SEA is conducted before a corresponding EIA is undertaken. The idea being that information on the environmental impact of a plan will be able to cascade down through the tiers of decision making and be used in an EIA at a later stage. The need for SEA was established after it was agreed that EIAs only applied to certain projects and as such only dealt with specific effects at the local level, whereas many potentially environmentally damaging decisions had already been made at a more strategic level. In Europe, the Convention on Environmental Impact Assessment in a Transboundary Context the so called *Espoo Convention,* laid the foundations for the introduction of SEA in 1991. In 2003, the Espoo Convention was supplemented by a Protocol on Strategic Environmental Assessment. The European SEA Directive (2001/42/EC) required all member states of the European Union to have ratified the Directive into their own country's law by July 2004. The SEA Directive only applies to plans and programmes, not policies, although policies within plans are likely to be assessed and SEA can be applied to policies if needed, which is often the case. SEA within the UK is complicated by different regulations, guidance and practice between England, Scotland, Wales and Northern Ireland. In the UK,

7

SEA is inseparable from the term 'sustainability', and an SEA is expected to be carried out as part of a wider Sustainability Appraisal (SA), which was already a requirement for many types of plan before the SEA directive, and includes social and economic factors in addition to environmental. (More on this in the SA section of this paper).

The SEA process is objectives-led, in the sense that it tries to influence PPP making, and baseline-led, relying on baseline data for making projections in its assessment (Fischer, 2007). The ultimate aim of SEAs is to protect the environment and promote sustainability by improving PPP decision making from an environmental perspective. It was initially thought of in terms of applying EIA principles to PPP, however greater understanding has led to different interpretations of the SEA directive, highlighting certain key differences between EIAs and SEAs. Firstly, there are different geographical and time scales for SEAs to EIAs; secondly, different levels of detail are required for each of these processes and thirdly, strategic decision processes are organised differently to project planning (Fischer, 2007). Incorporating these differences has led to SEAs being a more evidence based tool aimed at providing scientific rigour to PPP making and thus provide a more structured decision making framework.

At the heart of the SEA process (see fig. 2) is the preparation of an environmental report which includes information on the relationship between different PPPs; identifies significant impacts of different alternatives; explains how the SEA was considered in the decision making and provides information on the reasons behind the choice of a certain alternatives (Fischer, 2007). Furthermore, the environmental report should apply a precautionary principle; "if the value of development and its impacts are uncertain there should be a presumption in favour of protecting what exists" (Therivel, 2004, p.8). SEAs need to ensure strategic actions do not exceed limits beyond which irreversible damage from impacts would occur. Strategic actions cover a range of activities (e.g. land use or developmental plans for an area, financial allocations, management of a particular sector such as agriculture) (Therivel, 2004).

The rationale for applying SEAs to PPP making is also subjected to much criticism for its shortcomings. There is a perceived weakness in PPP making in that it is focused too much on utilitarian and economic principles which the SEA seeks to address. However, "despite the efforts made, environmental issues – and particularly those that are of a strategic nature – are still frequently treated as simple 'add-ons' that are taken into account not during, but after PPP processes have been conducted" (Fischer, 2007, p.8). In dealing with environmental issues reactively the focus is shifted to mitigating negative impacts, rather than proactively seeking alternatives that enhance positive impacts, which is a limited approach to addressing environmental concerns. This is also short-sighted and the lack of baseline data in current PPP making practice means that it is often politically expedient decisions that prevail for short term interest.

Another argued advantage in the application of SEAs is in the consideration of cumulative and synergistic impacts of multiple projects. SEA can support a

8

process by applying structured frameworks and creating the context for a more focused approach. This aim is hindered by the previously discussed criticism of its reactive application, for a proactive approach would enable the SEA to detect not only direct but indirect cumulative and synergistic impacts (Fischer, 2007). The SEA in this instance would also need to manage and analyse a huge range of data all of which come with associated uncertainties and "this often means that SEA cannot be as robust, detailed and 'scientific' as one might like" (Therivel, 2004 p.12).

A crucial aspect of SEA is the fact that it offers an opportunity for achieving greater transparency in the strategic decision making process through public participation. In so doing, it is argued that better governance and public trust will be gained (Kidd and Fischer, 2007) as well as leading to a better quality of life. While it is important to acknowledge that public participation is likely to be sporadic, in the sense that the public will not be equally interested in all strategic issues, it is also equally important to accept that stakeholder views will vary depending on the country, region, locality and underlying values (Fischer, 2007). Disagreement over SEA aims and objectives has frequently been cited as the main reason why SEAs rarely go beyond the screening and scoping stages in public participation.
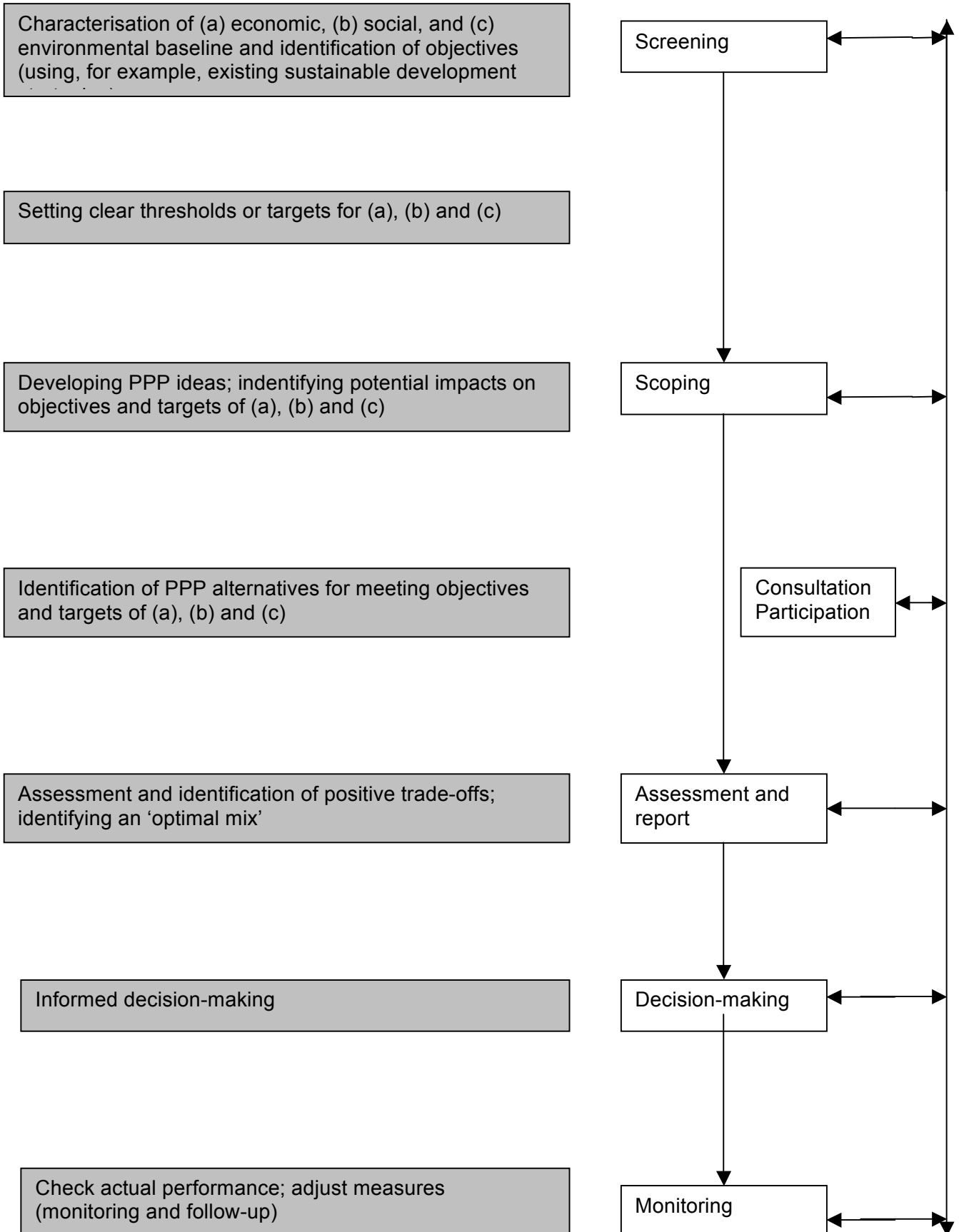
Interestingly, Fischer (2007) argues here that SEAs should be understood as a 'social learning process' among the different actors. "This is important because many of the decisions are not matters of expertise but matters of opinion, of values rather than facts" (Banister, 1994, p.129). In this respect, SEAs may be found to be effective in the long term; the behaviour and actors "may change due to systemisation of planning and social learning. The likelihood of indirect, long term effects in PPP making led Faludi (2000) to suggest that strategic plans are probably best evaluated not on the basis of direct, concrete material outcomes, but rather on the basis of how they improve understanding of decision makers of current and future problems" (Fischer, 2007, p19). In fact current research suggests that this has already started to happen in the Netherlands, where environmental awareness in administrations was enhanced through SEA and EIA processes (Van Eck and Scholten, 1997). Long term monitoring of decision making systems is therefore essential to this assessment.

It is important to take into account the fact that despite its initial conception in the 1970s, SEA is a relatively new process and this means it will take some time not only to shift attitudes to integrate environmental concerns more effectively in PPP making, but in also to raise the public expectation that this is how it should be. The process is also hindered by the lack of substantial baseline data and as such planners still need to go through a learning curve associated with any new decision making tool (Therivel, 2004). In time this

Figure 2. PPP Framework and SEA Process (adapted from Fischer, 2007)

PPP making framework in support of sustainable development   SEA Stages

PPP making framework	SEA Stages
Characterisation of (a) economic, (b) social, and (c) environmental baseline and identification of objectives (using, for example, existing sustainable development	Screening
Setting clear thresholds or targets for (a), (b) and (c)	
Developing PPP ideas; indentifying potential impacts on objectives and targets of (a), (b) and (c)	Scoping
Identification of PPP alternatives for meeting objectives and targets of (a), (b) and (c)	Consultation Participation
Assessment and identification of positive trade-offs; identifying an 'optimal mix'	Assessment and report
Informed decision-making	Decision-making
Check actual performance; adjust measures (monitoring and follow-up)	Monitoring

more efficient decision making will improve and it is hoped it will have a positive impact on the effectiveness of SEA. The time and resources that it currently takes to undertake an SEA is also anticipated to improve with experience. While the time and resources depend on the strategic action being assessed, many argue much of this could be recouped in easier, faster approval and implementation of the strategic action through the use of an effective SEA. Of course, the flipside of this argument is that if a SEA is conducted badly, all costs are not only incurred but no benefit is gained either, though current research demonstrates a trend towards gradual improvement.

Sustainability Appraisal

The definition of Sustainability Appraisal (SA) adopted by the UK government is "a systematic and iterative process undertaken during the preparation of a plan or strategy, which identifies and reports on the extent to which the implementation of the plan or strategy would achieve the environmental, economic and social objectives by which sustainable development can be defined, in order that the performance of the strategy and policies is improved" (DETR, 2000a). This definition relies on ensuring that each of the objectives, be they social, economic or environmental, define sustainable development, which is not always an easy process; what may meet an economic objective (such as the creation of more jobs) may not meet environmental ones (more jobs could mean more climate change) (George, 2001, p.96). The reconciliation of objective goals is normally part of the planning process which means that for an effective SA, objectives that define sustainable development must be developed within the planning process. The danger here is that the iterative processes become so intertwined that the SA disappears into planning (George, 2001). "The plan is evaluated against sustainable development objectives, but it is unclear how these relate to the plan's own objectives" (George, 2001, p. 97). In the UK, sustainability criteria have been gradually incorporated into Planning Policy Guidance (PPGs) since the publication of the White Paper "A Better Quality of Life: A Strategy for Sustainable Development for the UK" (DETR, 1999). The PPG (note 12) advises LPAs that sustainable development is not restricted to environmental considerations alone (Benson and Jordan, 2004). Furthermore, the PPG 12 argues that existing methodologies currently used in EIA can be adapted to incorporate economic and social issues in order to meet sustainability objectives. Guidance provided in the "Good Practice Guide on Sustainability Appraisal of Regional Planning Guidance" (DETR, 2000b) describes a "systematic, iterative seven-step procedure for an objectives-led approach to sustainability appraisal of RPGs."

The PPG 12 states that LPAs need to take into account additional features that should be included in the process; such as, public participation, the use of a scoping study, setting environmental objectives and consideration of alternatives and monitoring. While this appears to offer a clear framework for SAs, there is significant lack of clarity in their design and use. No new methodology is offered in the guidance notes and planners instead refer to a number of different sources (Benson and Jordan, 2004). There is currently no 'single model' approach to local plan sustainability appraisal and research

suggests that integration of sustainable development could be limited by this absence (Benson and Jordan, 2004).

The use of SA in UK land planning is currently discretionary and although research indicates an almost universal use of SAs among LPAs, the quality is extremely variable. Several reasons have been put forward to explain this; firstly it is argued that the collation of data can be potentially very expensive so this is limited by the resources available to each LPA; secondly, the analyses of data varied depending on the level and types of expertise the LPA had access to; thirdly although some research studies have shown significant evidence of scoping, in almost no cases have LPAs considered alternatives in plan policies as part of the appraisal process (Benson and Jordan, 2004), and finally, while many SA reports studied, showed references made to monitoring, none of the ones analysed provided information on 'remedial actions' (Hanusch and Glasson, 2008, p.608).

In terms of methodology, policies are assessed on the basis of a policy impact matrix which means they are scored against a set stock of criteria or objectives whereby "positive, negative, unpredictable and uncertain results are recorded, with an aggregate 'score' used to determine policy sustainability" (Benson and Jordan, 2004, p.279). Most of the appraisals examined in Benson & Jordan's study used this scoring model which was found to lack in "clarity, objectivity and transparency" (Benson and Jordan, 2004, p.279). Ultimately scoring was based on subjective value judgements, a fact many argue is inherent in such methodologies.

One way to counterbalance some of the subjectivity is through the involvement of the public in the appraisal process. Current active engagement with the public is extremely variable and sporadic. Most appraisals are conducted 'in-house' by Council officers and research has found that published appraisals are often inaccessible to the public due to the highly technical nature of the information they contain. Some countries have sought to address this, for example "Germany (EC, 2001, p.59), has statutory avenues for both formal and informal communication flows between administrators and public. Regulations on public participation in SEA also exist in Austria (EC, 2001, p.24) and New Zealand (EC, 2001, p.91-100), although gauging the success of implementation in these countries is problematic." (Benson and Jordan, 2004, p.282).

As with other environmental appraisals, monitoring is also a big weakness in current practice. There are no effective methods established at the moment for measuring the impacts of policies through time. There are questions on what and how to monitor, of which Hanusch and Glasson (2008) state "the appropriate level at which to monitor depends on the type and scale of the plan to be monitored 'and that monitoring needs to consider beneficial and adverse, as well as secondary, cumulative and synergistic effects' (ODPM, 2005, p.145)". Monitoring therefore is case specific and not a generic process.

There are a number of serious and inherent weaknesses in SA. "An objectives-based approach to the sustainability appraisal of development planning can lead to lack of clarity between what is appraisal and what is

planning. If the planning process aims to deliver sustainable development, it must itself define objectives for sustainable development, and evaluate the interacting social, economic and environmental factors that contribute to that goal" (George, 2001, p.103). There are doubts over whether the appraisals are in fact resulting in 'sustainable' plans. It is evident that more guidance is needed for every stage of the appraisal process, a requirement which the government has begun to address. Critics argue though that even with formal and comprehensive guidance, SAs would still be problematic; "there are theoretical and practical difficulties associated with predicting certain secondary, cumulative, synergistic and irreversible effects across different time scales, e.g. climate change" (Benson and Jordan, 2004, p.284). The Royal Commission on Environmental Pollution has raised concerns on the use of planning as a tool of sustainable development policy. It argued that "it does not provide an integrated, accountable and transparent way of setting and achieving environmental goals" (RCEP, 2002, p.1). It advocates instead parallel reforms in environmental policy, the role of planning in sustainability, "integrated spatial strategies that prioritise sustainable development and cover all land use, improving information availability and public participation" (RCEP, 2002 p.1). Finally it must be recognised that "SA is not an end in itself and should in any case be integrated into wider changes within the planning system" (Benson and Jordan, 2004, p. 285).

Deliberative Processes

As trust in representative democratic methods has waned over recent years, many have looked towards more participatory methods in decision making processes. One such method, adopted in land use and transportation planning, is the application of deliberative and inclusionary processes. Deliberation is the weighing up of the pros and cons of a particular issue and using that analysis to reach a decision. "It is the seeking and the weighing of pros and cons that distinguishes deliberation from others forms of reasoning." (Manin, 2005, p.14) "Inclusion is the act of including others in the process of consideration, decision and implementation. Inclusion goes beyond debate over who should be involved; it is also concerned with the means by which participants can take part, the agendas they are permitted to discuss, and the arrangements they make for those who cannot be present." (Munton *et al*, 2000, p. 504) A deliberative style of decision making has foundations with Jürgen Habermas's theory of communicative action. "Communicative action is a circumstance in which the social actors participate in dialogue/action with active and critical consideration of the bases for validity of the claims that they and others make. Through this process, participants can arrive at more fully reasoned conclusions than they can if they follow a narrower model of ends-means rationality." (Willson, 2001, p.12)

Willson argues that the current conventional model used in, transportation planning called instrumental rationality, is insufficient to requirements. Instrumental rationality is a process that requires the desired end result of the unitary decision-maker be known. The process emphasises reason which is based on rationality and logic and issues are to be observed in a neutral and dispassionate manner. "Furthermore, it assumes that urban and transportation systems operate in mechanistic, predictable ways – that

immutable laws about travel behaviour can be discovered and used for prediction." (Willson, 2001, p.4.). Willson argues that this model is too restrictive and that planners often find themselves unable to reach a consensus concerning the ends of planning. Various stakeholders have different goals and the range of objectives have widened significantly in recent decades. "Instead of well defined problems, they find multiple, perhaps ideologically defined problems. Instead of perfect information and analytic certainty, they find contested, ideological information and models that are stretched to represent complex behavioural realities." (Willson, 2001, p.4.). As such, the instrumental rationality model is not useful in this regard. Criticisms have led to the development of communicative rationality as another model of deliberative process.

Communicative rationality, on the other hand, "offers a new paradigm for transportation planning." (Willson, 2001, p.1.). Communicative rationality places language and discourse at the heart of the deliberation model. It is an approach that integrates "scientific and interpretive/social learning approaches. A precise definition of communicative rationality is elusive because it is a theory 'in action' that can result in different formulations depending on the circumstance of a planning problem." (Willson, 2001, p.10.). In practice, it has certain characteristics however, namely a focus on discourse. Willson argues that reason is derived from a communicative practice that is "specific to people, time and place." Habermas's theory of communicative action plays a central role in this model. "He responds to the decline of logical positivism by attempting to create standards of truth and goodness that do not rely on ontological or transcendental bases, but are grounded in a science of everyday communication." (Willson, 2001, p. 11.). By using the communicative rationality model, planners should be able to reduce distortions of communication and further improve or enable: greater comprehensibility of statements; accuracy of statements (their relationship to the objective world); the legitimacy of the speaker (in relationship to the social world); the sincerity of the speaker (in relationship to the speaker's subjective world). (Willson, 2001). By placing language at the core of the planning activity, the model is inclusive of community participation, modelling, policy exploration and politics. The process involves critical self awareness and encourages the critical consideration of validity made by any claim. Innes (1998) focuses on information in communicative processes and argues that "information becomes gradually embedded in the understandings of actors in the community, through processes in which participants, including planners, collectively create meanings. The participants, moreover, rely on many types of 'information', and not primarily on formal analytic reports or quantitative measures." (p.53.). Willson argues that communicative rationality can enhance the quality of deliberation and support consensus-based decisions. This section seeks to provide a summary of the key deliberative models with the advantages and disadvantages they present over conventional decision-making models.

There are a number of different methods used in deliberative and inclusion processes. Citizens' juries, for example, are the institutionalisation of the deliberative model. "They are typically composed of 10-20 people, selected randomly as a quota sample, to be statistically representative of the major

14

strata of society. Members are asked to take an informed, longer- term, and impartial view of an issue. They answer a 'charge' posed by the organisers, who typically consult the sponsors of the jury and occasionally other stakeholders when framing it." (Ward *et al*, 2003, p. 282.) The jurors usually take part in the process for two or three days and are paid. Facilitators are also present to help with the structure of the process. Citizens' juries are frequently praised as an innovation for deepening the democratic process and many believe they are a useful tool for addressing many issues where the quality of participation is paramount. "By giving up on large-scale involvement, citizens' juries meet the minimal requirement for deliberation – that participants have the opportunity to change their minds through discussion (Przeworski, 1998). Moreover, they address collective action dilemmas that bedevil other deliberative forums." (Ward *et al*, 2003, p.284)

Yet, the logic of citizens' juries do not hold with everyone; the issue of representation can be difficult to assess, for example, "some may have an interest in or enjoy participation, while others may take advantage of existing community structures favouring collective action (Ostrom *et al*, 1994, Jordan and Mahoney, 1997, Opp, 1999). This implies that participants in many deliberative forums are unlikely to be a comprehensively socially representative group (Mason, 1999)." (Ward *et al*, 2003, p. 284). This is a significant issue as the social representation characteristic is the most crucial component in this deliberative model. The social representation they offer is decided by the local stakeholder groups who feel have the most intense interest in each case. Of those participating some may not become sufficiently well informed and this would also affect the quality of the deliberation.

Many would argue however, that despite reservations, citizens' juries offer many advantages. They encourage social action; the learning process enables change through debate and offer educational payoffs "expanding participants' moral and intellectual horizons (Elster, 1998a, p.11; Forester, 1999, Sanders, 1997, p.350.)" (Ward *et al*, 2003, p.285.). Concerns have led to the development of evaluation criteria which continually refine the process and improve the quality of decisions reached. Overall, research suggests a support for the case of citizens' juries.

Deliberative mapping is a methodology which can be applied to a problem to judge how well different courses of action perform according to a set of economic, social, ethical, and scientific criteria. The aim of this approach is to offer a basis for more "robust, democratic and accountable decision making which better reflects public values." (Final Draft Consultancy, Briefing 2, 2004, p.2.). The process brings together specialists and public representatives to appraise a complex problem and systematically weigh up the pros and cons of each issue. The approach emphasises the value of involving a wide range of representatives for different socio-economic and demographic backgrounds with a stakeholder advisory panel. Citizens are divided into panels and joint workshop discussions are held whereby citizens and specialists have an opportunity to learn from each other's discussions. Each issue is appraised according to the deliberative mapping framework (see fig. 3.) which results in a 'map' "of the way the performance of each option under consideration varies under different perspectives." (Final Draft Consultancy, Briefing 2, 2004, p.3.).

The results are further analysed through qualitative analysis using the transcripts of each panels' deliberation process.

The challenges of this model are to ensure: a clear definition of terms and meanings are established and agreed prior to deliberation; each participant is adequately informed and understands the complexity of the issues; adequate resources are provided to enable the process to be carried out; how the results of the process are used in decision-making. The process has its disadvantages in that it is complex, time consuming and expensive. It requires high quality facilitation and it needs to be managed effectively for the best results. There are also no guarantees that the results will be fed effectively in the decision-making process. However, the process, when carried out effectively, offers not only a unique opportunity for the public to get their strong views on an issue across to relevant key experts, but also enables the improvement of understanding as to how assessments are made and the reasons underpinning the judgements of those involved. (Final Draft Consultancy, Briefing 2, 2004, p.4.). To this end, it may be argued, that the advantages outweigh the disadvantages of this process.

Engaging deliberative processes in decision making, in theory, provides a more democratically satisfying way of making public decisions about environmental issues. In practice more research is required to assess whether these processes actually produce tangible societal benefits. Current evaluations suggest that in some areas at least, the quality of the decisions made has improved, and moreover, there has been a marked improvement in the relationships between stakeholders and trust in governmental agencies. Increased awareness and knowledge of complex environmental issues also feeds into wider society and enables a more educated level of public engagement.

Less encouraging are some common problems that research has drawn up in various evaluations. They centre on issues of representation; where public engagement is not sufficiently socioeconomically representative and in some cases not all major interests where involved. This is a fundamental weakness of the stakeholder process which needs much attention as it lies at the heart of the effectiveness of all deliberative processes. Representative democracy is seen as insufficiently unrepresentative to the needs to minority groups thus the call for greater civic engagement is a valuable one, provided that this representation is provided for adequately, in the process. There is growing anecdotal evidence of 'stakeholder fatigue' "where consultation has become a burden, or even viewed as a form of control. Establishing the most effective ways to proceed remains a major task and is itself part of the reform process." (Bloomfield *et al*, 2000, p.509.). However there are limits to what is deemed 'practicable engagement' and needs to be based on the principles of transparency, negotiation, respect, and inclusion as well as effective evaluation. Without effective evaluation we are not able to judge whether deliberative processes do in fact lead to better decisions.

Figure 3. Deliberative Mapping (DM) framework for appraisal
(Taken from Deliberative Mapping: Citizens and specialists informing decisions on Science and technology, briefing 2, Final Draft Consultants, 2004.)
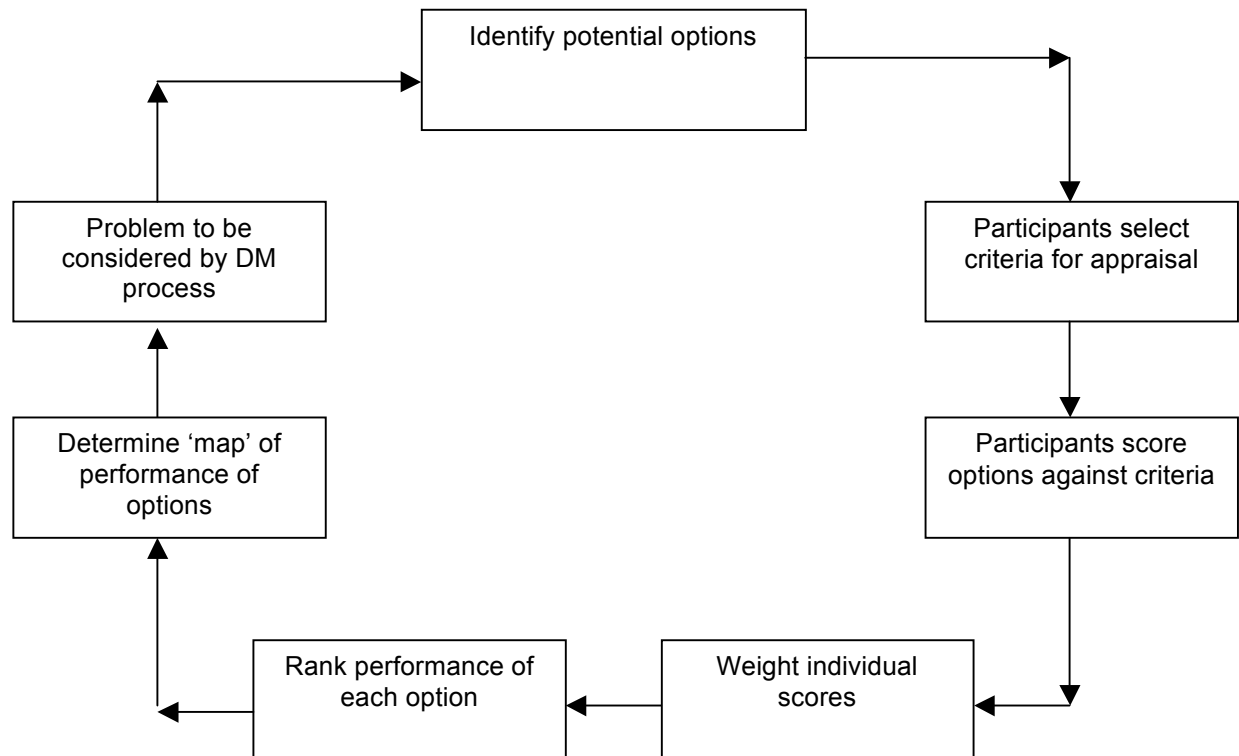
Early research suggests that communicative action offers a sense of ownership of the decisions made, even when the outcome is not supported by everyone. Effective engagement raises the level of trust and understanding of the decision making process as well as greater acceptance of a decision made. The main drawback is "that feelings of civic pride may be an insufficient incentive to engage. This is not merely a matter of compensating for the time consuming nature of deliberative processes, although practical experience reveals this to be an issue in itself, but we also often lack evidence that those who have participated have been listened to, a requirement fundamental to the building of trust and commitment." (Bloomfield *et al*, 2000, p.510.). It is also important to recognise that while public participation is seen as crucial in effective decision making processes, "the state has to retain a central role in any change. Individual citizens may distrust it but they also expect it to protect them from other powerful interests. It is expected to facilitate but not control, to diffuse its power, and not simply through partnerships with other powerful interests who 'can get things done' and to become more transparent." It is essential, therefore, to critically examine the engagement of deliberative processes and to evaluate them in order to ensure that they do lead to better environmental decisions and offer adequate representation of the public they seek to serve.

There are a number of environmental, social and economic factors that need to be addressed by SEAs, EIAs and SAs as outlined in fig. 4. Deliberative processes are better at dealing with qualitative data on the whole, but can also be used to engage community panels in assessing how much importance should be attributed to, and if they endorse, any set of expert data for a particular case. In terms of the monetisaton of factors, deliberative processes can be combined with certain methods in attributing a monetary value for each category or factors.

There are currently a number of methods for monetising environmental goods and services:

a) Hedonic Pricing Method: this is a statistical technique used to analyse property prices based on the impact of environmental factors, such as views, landscape, accessibility to workplaces, and commercial amenities. "The property value approach to the measurement of benefit estimation is based on this simple underlying assumption. Given that different locations have varied environmental attributes, such variations will result in differences in property values." (Pearce et al, 1992, p.65)

b) Travel Cost Method: this is another statistical technique and is "based on an extension of the theory of consumer demand in which special attention is paid to the value of time" (Pearce et al, 1992, p.71). It is an assessment of how much someone is willing to pay in cost and time, to visit a site such as a national park, the Lake District, or the Peak District, etc.

c) Contingent Valuation Method (CVM): This is an experimental interview based method. "it basically asks people what they are willing to pay for a benefit, and/or what they are willing to receive by way of compensation to tolerate a cost" (Pearce et al, 1992, p.69) Benefits would include things such as the quality of the air or water etc. This approach would fit best with the deliberative process as it is a participatory interview technique as opposed to a statistical method like the other two above.

The deliberative process can also deal with multi-criteria analysis (MCA) by using deliberation to attribute a weighting to each criteria. But, as with incorporating CVM into deliberative processes, this should not detract from the much richer information on community-based values and stakeholder views that is derived from a deliberative exercise.

Conclusion

Environmental Impact Assessments

- Is the data gathered sufficient for the scoping stage requirements?
- Are the cumulative effects of any decisions adequately assessed in the ES?
- Was the public consulted at every stage of the EIA process?
- Were alternatives adequately assessed?

- Has adequate follow-up/monitoring been put in place to evaluate the impact of the decision?

Strategic Impact Assessments/Sustainability Appraisals

- Are enough resources (and time) allocated to carry out a robust SEA/SA?
- Is the methodology applied sufficient to the type of data gathered and information required?
- Has there been sufficient public participation and stakeholder involvement in the process?

Deliberative Processes

- Is the group sufficiently representative in socioeconomic and demographic and interest terms?
- Is the group adequately informed on each issue?
- Have clear definitions of terms and meanings been established and agreed by the group prior to consultation?
- Do deliberative processes lead to better decisions?

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