Introduction

It is generally accepted that the ultimate aim of Environmental Impact Assessment (EIA) is to contribute to sustainable development (Sadler 1996). It is also broadly acknowledged that EIA has the potential to play a significant role in facilitating the transition to sustainability. Whilst it is difficult, if not impossible, to objectively assess the contribution of EIA to sustainable development in practice (O’Riordan 1993), it is clear that many stakeholders believe the German EIA system is performing unsatisfactorily in this respect (see Part 1). Strategic Environmental Assessment (SEA) is viewed, both nationally and internationally, as a partial solution to this problem (Nieslony 2004, Fischer 2003, Benson 2003), but it would be naive to expect the introduction of SEA to obviate all the perceived failings of EIA. It is imperative, if EIA is to retain its social relevance, that greater attention is given to enhancing its contribution to sustainable development. The majority of criticisms levelled at the German EIA system relate to internationally recognised problematic practices, such as a limited consideration of alternatives, scientifically inadequate impact predictions, and the difficulties associated with analysing cumulative impacts. The authors suggest, however, that there is a more fundamental problem which, to a large degree, underlies such criticisms. The problem is that the relationship between EIA and sustainable development is inadequately understood, there having been remarkably little consideration of what sustainable development actually means for the theory and practice of EIA (Gibson 2001, Cashmore et al. 2004). Thus, most criticisms of EIA are based on conventional (and mainly rationalist and post-positivist) assumptions about how EIA should operate, which largely pre-date contemporary concern for, and understanding of, sustainability. Given the changing context of environmental governance, there is, as a minimum, a need for critical reflection on what sustainability actually means for the theory and practice of EIA.

This article thus aims to enhance the contribution of EIA to sustainable development not by concentrating on tangible solutions to problematic practices identified by German stakeholders, but by contributing to a richer conceptual understanding of the fundamental relationship between EIA and sustainable development. This unpacking of their relationship commences with a critical examination of the implications of the lack of a consensual interpretation of sustainable development. The analysis then focuses on developing a richer conceptualisation of what can, and cannot, be expected of causation in EIA.

Defining conditions for sustainability

Precisely what sustainable development means, both in theory and practice, is a vexed question, for its broad appeal has not led to coherent interpretations. It is generally accepted that sustainable development involves reconciling social, economic and environmental imperatives in development planning and the application of precaution. It also includes issues of distributional and generational equity (Adger et al. 2003). However, the detailed principles required to implement this concept are profoundly contested (Gibson 2001, O’Riordan 2001a). The lack of singularity of definition has re-
sulted in two polarised approaches to implementing sustainability, the implications of which are of considerable relevance to understanding EIA's contribution. The first approach involves expounding rigorous and comprehensive principles or decision rules for sustainable development (for example, the environmental capital model (Turner 1993)). An inescapable conclusion of such approaches, however, is that there can be no objective, technical method of establishing sustainability principles (Owens & Cowell 2002). This is because their development is inevitably a value-laden process (Bossard 2000, Owens & Cowell 2002). Nowhere is this more evident than in decisions concerning distributional and generational equity.

The alternative approach attempts to circumvent the complexities of defining a comprehensive set of sustainability principles by implementing only the core concepts of sustainable development (see, for example, George 1999). This may appear to constitute a pragmatic solution to divergent interpretations of sustainable development. Yet, unless there is sufficient opportunity for stakeholder engagement, such an approach risks merely concealing the values inherent in sustainability principles. Furthermore, it also entails difficult questions about boundary setting in determining what constitutes a core concept.

This does not mean that sustainability-influenced EIA practices are unproductive. It is suggested, however, that their main contribution, even under conditions of limited stakeholder engagement, is to provide a forum in which the meaning of sustainability can be debated and refined, rather than implemented per se (Owens & Cowell 2002). The importance of this contribution should not be underestimated, for, if it is accepted that operationalising sustainable development involves values, then it is logical that democratic processes are employed to debate which values take precedence.

Thus, Owens & Cowell (2002: 70) conclude: “... that to conceive of these [environmental appraisal] approaches as instruments in promoting some preformed, consensual concept of sustainability is profoundly misleading. In practice, all are bound into power struggles in which conceptions of what is sustainable are actively constructed and negotiated” (original emphasis). That there can be no straightforward answer to conceptualising what sustainability means in the context of EIA is an inescapable, if uncomfortable, conclusion.

The contribution of EIA: Understanding causation

In advancing our understanding of the contribution of EIA to sustainable development, it is important to appreciate the breadth and significance of causation in EIA. In particular, the development of a much richer understanding of its outcomes is required. The outcomes of EIA are frequently narrowly construed to constitute its contribution to consent and design decisions. Thus, in respect to sustainabil-ity, EIA is often viewed either as a tool to determine whether or not a development is sustainable or to promote integrated consideration of environmental, economic and social concerns (Pope et al. 2004, George 1999). However, outcomes and decisions are not one and the same (Adger et al. 2003), and there is a need to move beyond such simplistic conceptions of the ways in which EIA contributes to sustainable development.

A particularly significant form of causation in the context of EIA's contribution to sustainable development - which, although widely acknowledged, has received limited consideration - is the fostering of multiple types of learning (McDonald & Brown 1995, Owens et al. 2004). Learning can take the form of enhanced environmental awareness amongst (but not limited to) members of the public; improvements in scientific understanding of the response of social or biophysical systems to anthropogenic perturbations; and, advances in environmental engineering techniques. It is postulated, however, that the influence of learning extends far beyond such immediate consequences, for it has the potential to produce a cascade of higher order effects. For example, learning can alter value and belief systems (Bartlett & Kurian 1999). This can be expected to have diffuse, and potentially quite profound, influences on the subsequent actions of organisations and individuals, a fact which is recognised in efforts to 'mainstream' EIA, and environmental values more generally (for example, World Bank 2001, Jordan & O’Riordan 2001).

Deliberative procedures undoubtedly play an important role in promoting learning amongst, and between, stakeholder groups, even where EIA practices appear to be overwhelmingly ‘technical’ (Owens & Cowell 2002, Novek 1995). Their significance is presently underestimated, in part because both the importance of learning and the opportunities for deliberation presented by EIA are not satisfactorily appreciated. However, learning is also only one of the outcomes of deliberative causal mechanisms. Most importantly perhaps, in the context of sustainability, is that deliberative procedures can change the rules of environmental governance by altering expectations about what is fair and just in decision-making. This has occurred, for example, as a result of debate on stakeholder engagement within the academic literature (Sheate 2003, Petts 1999), but much has been achieved through the enhanced opportunities for public (including legal) scrutiny created by EIA (Novek 1995, Weston 2002). As Gibson (2001: 19) states, “[b]etter governance is a prerequisite and probably also a product of steps towards sustainability.”

There is also speculation that EIA contributes to sustainable development through a series of additional, and often highly interlinked, causal mechanisms. Bartlett & Kurian (1999) suggest it exerts an influence as a consequence of the symbolic importance the existence of EIA legislation places on environmental concerns. EIA also contributes to institutional reform (which itself is dynamically linked to issues of belief systems and governance), and such changes may be remarkably pervasive (see, for example, Bond 2003). Cashmore et al. (2004) propose that EIA may produce a diverse range of outcomes which promote incremental change in institutions, organisations, philosophy, science and culture (see Figure 1). These are topics which require further consideration if we are to advance our conceptualisation of the contribution of EIA to sustainable development.

The contribution of EIA: Unrealistic expectations

Whilst the authors suggest the breadth and range of causation in EIA, and particularly outcomes, is under-appreciated, it can also be argued that some expectations of what this appraisal tool can, and should, achieve are unrealistic (Owens & Cowell 2002). One important source of such unrealistic expectations is the divergence between normative theory concerning the operation of EIA and real-world decision-making practices. The influence of behavioural variables on decision-making, most importantly the interplay of power relationships, has been repeatedly demonstrated (Flyvbjerg 1998, Flyvbjerg et al. 2003). Most models of EIA; however, remain ineluctably based on a false presumption of rationality in decision-making. This is not a criticism of normative theory. But, given the influence of behavioural variables, it is, as a minimum, mis-
leading to evaluate the contribution of EIA to sustainable development based on such premises. Whether practices should be reformed, given the existence of behavioural variables, is a more complicated issue, and one which is being played-out concurrently in a number of disciplines.

Other criticisms are that normative theory originate from a failure to appreciate the limitations of the science underpinning EIA. The environmental sciences are highly uncertain sciences, due, in no small part, to the complexities of the systems under consideration. Although inadequate impact predictions practices often result from limitations of time and money, even given longer timescales and more generous financial resources, science may not be able to provide answers that satisfy policy-makers’ demands. For instance, despite decades of research, considerable uncertainty pervades questions of the anthropogenic impact upon the global climate system, ecosystems and human health. Similarly, whilst EIA has been criticised for failing to satisfy demands for more deliberative systems of governance (Benson 2003), from a methodological perspective, this is an area in which environmental sciences are under-equipped (O’Riordan 2001b). Stakeholder engagement is also characterised by fundamental ambiguities: we involve stakeholders because it is a principle of good governance, but precisely what it should achieve is somewhat ambiguous (Potts 1999, Owens & Cowell 2002, Ellis & Waterton 2004). Furthermore, it is questionable whether dissatisfaction with public participation in environmental decision-making reflects criticisms of EIA or of the state of local democracy itself (Tomlinson 2003).

A failure to account for the policy context in which EIA operates also promotes unrealistic expectations. EIA forms one component of a broader framework for environmental management, and account must be taken of both its role and purpose within this policy framework, and the inherent limitations of a project-based appraisal tool. Thus, for instance, a focus on fine-tuning development initiatives, primarily through the identification of mitigative measures, might constitute an appropriate contribution to sustainable development, providing EIA is supported by a robust spatial planning framework.2

Conclusions

The difficulties associated with producing an adequate empirical evaluation of the contribution of sustainable development represent a significant barrier to making sustainability more than just a rhetorical vision of almost universal appeal (O’Riordan 1993, 2001a, George 1999). The most intractable problem in defining sustainability principles is that they involve fundamental moral and political choices, and are, therefore, context dependent. This means that the use of EIA to assess whether a development proposal is sustainable will always be a complex and contestable endeavour, regardless of improvements in scientific understanding of environmental responses to human perturbations or technical improvements in EIA procedures. It is entirely unrealistic, therefore, to expect EIA to operate as a tool for implementing a predefined definition of sustainable development (Owens & Cowell 2002). Based on this unpacking of the relationship between EIA and sustainable development, it is suggested that EIA can, and does, contribute in a variety of ways in addition to testing for sustainability or through the mere provision of information. These contributions include, amongst others, providing opportunities for debate on what sustainability means, changing the norms of environmental governance, and altering value and belief systems. In this respect, it can be concluded that EIA is operating, as envisaged by Sadler (1996), as a ‘frontline’ tool in facilitating the transition towards sustainability, but in a different manner to that traditionally (and, it could be argued, naively) expected. Clearly, however, the analysis in this article is exploratory, rather than definitive. The development of a richer conceptualisation of the contribution of EIA to sustainable development is a journey in progress.

References


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